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ABSTRACT

A third-party national evaluation of the basic grants section of the Adult Education Act was conducted in September 1990. The study drew on data from the following sources: 1990 mail survey of all federally supported local service providers; longitudinal study of local programs that provided information on the characteristics of more than 22,000 adults enrolled in local programs from April 1991 to April 1992; and telephone survey of a subsample of nearly 6,000 clients 6 months after they left the program. The samples were weighted to make them nationally representative. The program was serving between 2.6 and 3.2 million clients annually (approximately 46% in English-as-a-Second-Language programs, 30% in adult secondary education, and 24% in adult basic education). The program was credited with improving clients' reading, employment, and self-concept levels. Its population was increasing by about two-thirds more than its capacity. Appendixes constituting approximately 50% of this report include the following: table detailing the study objectives and reports where they are addressed; telephone survey instrument; information on sample design, data collection, and standard errors; persistence tables; methodology of the learning gains study; and 35 selected updated tables from second interim report. Contains 54 tables/figures and 33 references. (MN)

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NATIONAL EVALUATION OF ADULT EDUCATION PROGRAMS

Fourth Report

Learner Outcomes and Program Results

Prepared by:

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December 1994

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This report is pursuant to Contract No. LC90065001 (Rob Barnes, Project Officer). The names of the persons employed or retained by Development Associates, Inc., with management or professional responsibility for this phase of the project and this report are listed below. The amount to be charged to the U.S. Department of Education for the entirety of this contract is approximately $2,690,731.

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The study reported herein was performed pursuant to a contract with the United States Department of Education. However, the opinions, conclusions, and recommendations expressed herein do not necessarily reflect the position or policy of the Department of Education, and no official endorsement by the Department of Education should be inferred.

EXECUTIVE SUMMARY

Background

In September 1990 the U.S. Department of Education contracted with Development Associates, Inc., to conduct a national evaluation of the basic state grants section of the Adult Education Act. This report summarizes findings and conclusions with respect to client enrollment and attendance, client educational and employment outcomes, and the impact of the program on the country's continuing literacy needs. Three previous reports from the study contain additional detail.

Methodology

The study draws on data primarily from: (1) a mail survey of all federally supported local service providers, conducted in the fall of 1990; (2) a longitudinal study of local programs, which provided information on the characteristics of over 22,000 adults who enrolled in local programs during a 12-month period (April 1991 to April 1992) and on the amount and type of instruction and other services these clients received for 18 months after they enrolled; and (3) a telephone survey of a subsample of almost 6,000 clients 6 months after they left the program. The samples have been weighted to make them nationally representative.

Major Study Findings

Patterns of enrollment and persistence

- the program serves between 2.6 and 3.2 million clients annually, with about 2 million of them newly enrolled;
- about 46 percent of clients enroll in ESL, 30 percent in ASE, and 24 percent in ABE;
- about 15 percent of clients who enroll in the program never actually receive instruction;
- the median number of hours of instruction for clients who receive 1 hour of instruction or more is 58 hours;
- the median number of hours of instruction clients in ESL receive is about 3 times that of those enrolled in ABE (113 and 35 hours, respectively) and 4 times that of clients enrolled in ASE (28 hours);

- about 76 percent of the total number of instructional hours received is by clients in ESL, about 13 percent in ASE, and 11 percent in ABE; and

- the strongest predictors of persistence are:

  → the presence of support services that clients actually use;

  → the receipt of instruction during the day as opposed to evening hours; and

  → the type of learning environment in which clients participate (but the type of environment that was most predictive was not the same for all three instructional components).

Client-related outcomes

- Clients who took pre- and posttests made significant improvements in their reading achievement:

  → ESL clients gained an average of 5 scale score points on the CASAS reading test; and

  → ABE and ASE clients gained an average of 15 and 7 scale score points, respectively, on the TABE reading comprehension subtest.

- On the basis of interviewing clients 6 months after they left the program we found that:

  → a majority believed they had been helped to improve "a lot" in at least one area of basic skills;

  → there was a net increase of 6 percent in employment following participation in adult education, with ESL clients reporting having benefitted the most;

  → between 11 and 30 percent of the program's ASE clients (or, 4 to 12 percent of all clients served) were helped by adult education to complete their secondary education;

  → approximately 70 percent of the program's participants who had goals related to improving their self-concept were helped in that regard;

→ there was a net increase of 15 percent in the number of former clients who read more frequently to young children in their household; and

→ approximately 70 percent of the clients benefitted from participation in adult education with respect to at least one of the three major purposes of the Adult Education Act, with the majority of clients (58 percent) indicating these benefits to be in the area of improving their basic education skills.

Reasons clients leave the program

- 41 percent of the participants report they left the program because they had completed their course of study;
- a plurality of clients (45 percent) left for reasons external to the program, such as employment, health or child care problems; and
- approximately 7 percent of the clients terminated instruction because of dissatisfaction with their adult education program.

Program results

By relating estimates of the size of the program's target population to information on client enrollment and attendance the report shows:

- the program serves substantially more ESL clients per 1,000 members of the target population than members of the other two subgroups (i.e., ABE or ASE);
- depending on the time of year, between 16 and 25 percent of programs report that they have waiting lists of clients they are unable to serve, with most of the clients on these lists waiting to begin instruction in ESL; and
- the program's target population increases by about two-thirds more each year than the program is able to successfully serve, with the greatest area of unmet needs being adult secondary education.

ACKNOWLEDGEMENTS

We extend our sincere appreciation to the many individuals who contributed to this project and helped create this report on its results. This evaluation would not have been possible without the continued involvement and tolerance of the program directors and staff of the local programs participating in the study. This study placed a substantial burden on the staff of the participating local programs, and these dedicated professionals should receive much credit for the study's successful completion. Throughout the data collection period and after, they responded graciously to myriad requests for information.

Rob Barnes, the Project Officer from the U.S. Department of Education, has had primary responsibility for coordinating the evaluation from its inception through the preparation of this final report. Throughout the study he has provided strong direction and provided innumerable useful comments and suggestions on issues of design, analysis, and reporting.

The study has had a Technical Advisory Group that has provided guidance since the study began. The members of that group are: Hal Beder, Connie Eichhorn, Rachel Hidaka, Noreen Lopez, Jane MacKillop, Lennox McLendon, and Jack Mezirow. Their assistance and support is very much appreciated.

Thomas B. Jabine and Larry Hotchkiss have been senior sampling and statistical consultants throughout the life of the evaluation. Tom Jabine designed the sampling plan and has overseen its implementation and the development and application of weights. Larry Hotchkiss has been particularly helpful in developing statistical weight adjustments to compensate for missing data and in the design and interpretation of statistical models.

We also acknowledge the support of numerous individuals on Development Associates' staff. Paul Hopstock, Pat DiCerbo, Beth Felsen, and Diana Davis served in senior analytic roles at various points in the study and have contributed to the preparation of sections of this report. Laura Williams provided expert programming; Cynthia Hamill provided the graphics; and Kate Hanley and Kelly Linger worked tirelessly with the local program directors to maintain the quality of the data. William Falcon provided technical writing and editing expertise.

Malcolm Young, Project Director
Mark A. Morgan
Nicholas Fitzgerald

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Chapter 1
INTRODUCTION

The Adult Education Act was passed by Congress in 1966, and since that time the federal government has provided funds to states to help support a system of local adult education service providers. In 1991 the National Literacy Act broadened and strengthened the adult education program by incorporating as its Title III the basic state grants provisions of the earlier act. These grants are intended

> to assist States to improve educational opportunities for adults who lack the level of literacy skills requisite to effective citizenship and productive employment, to expand and improve the current system for delivering adult education services including delivery of such services to educationally disadvantaged adults, and to encourage the establishment of adult education programs that will --
>
> 1. enable these adults to acquire the basic educational skills necessary for literate functioning;
>
> 2. provide these adults with sufficient basic education to enable them to benefit from job training and retraining programs and obtain and retain productive employment so that they might more fully enjoy the benefits and responsibilities of citizenship; and
>
> 3. enable adults who so desire to continue their education to at least the level of completion of secondary school.

In September 1990 the U.S. Department of Education embarked on a major national evaluation of the basic state grants section of the Adult Education Act. The central purpose of this study was to evaluate the potential of programs supported by that section "for significantly reducing deficits in the adult population with respect to literacy, English proficiency, and secondary education." (See Appendix A for the 12 objectives of the national evaluation.)

This report is the last of a series of four that present study findings. The first interim report (1992) describes the adult education service delivery system and is based on a mail survey, completed in December 1990, of all service providers and on more detailed information obtained from 131 programs during May-November 1991.

The second interim report (1993) presents characteristics of clients who entered sampled adult education programs during the evaluation's 12-month intake period beginning in April 1991. Program staff recorded client data on forms specially

provided for that purpose. The report also presents preliminary findings on client attendance and persistence.

The third report (1994) describes patterns of attendance and factors associated with the persistence of adult education clients during the first 12 months following their enrollment in the program during the intake period beginning April 1991. The major data source for the report was the client update record, which provided data on attendance patterns of, and services used by, each client.

This, the fourth report, focuses on client outcomes and on program impact on adult education demand and needs vis-a-vis the target population. This report uses the study's final data files relating to research described in the first three reports and includes telephone follow-up survey data collected from a subsample of clients 6 months after they terminated instruction. After publication of the second and third reports, data on which they are based had to be adjusted mainly for two reasons: to incorporate late submissions and to revise sampling rates to adjust for actual participation in the study. These adjustments are fully reflected throughout this volume, and their impact on tables in the second interim report is noted in Appendix F. The adjustments' impact on key tables in the third interim report is addressed in chapters 2 and 3.

Published separately, an executive summary presents an overview of the findings and conclusions of all four reports and reflects the final data set.

Overview of the National Evaluation

The evaluation began with a Universe Survey, encompassing all local adult education service providers receiving Adult Education Act funds in the program year ending June 30, 1990. The results of that survey were used to obtain a nationally representative sample of 139 local programs for participation in the longitudinal phase of the study that began in April 1991. These programs agreed to complete a Comprehensive Program Profile Questionnaire and to provide data on the characteristics of a sample of clients who first enrolled in adult education between April 1991 and April 1992. They also agreed to supply data on the extent and type of instructional services those clients received for 18 months after their enrollment. Of the local programs initially agreeing to participate in the evaluation, 131 actually began data collection and completed a Comprehensive Program Profile Questionnaire. The final data files consist of data from the 116 programs that completed the 12-month client intake period and provided client enrollment data in accordance with the study's sampling plans; 110 of these programs provided attendance and related update information on their sampled clients for the entire 30-month data collection period.

Before data collection began, the participating local programs were trained to complete forms and protocols. We also reimbursed programs for some of the costs associated with data collection. Throughout the data collection period, we provided technical assistance to participating local programs in data collection and monitored the quality of the data received.

During the longitudinal phase of the evaluation, data were collected on the characteristics and experiences of entering clients, the amount and nature of instructional services those clients received for a period of 18 months, and characteristics of the service programs in which the new clients enrolled. Also, for subsets of those clients, data were collected—through telephone interviews 6 months after the clients ceased receiving instructional services—on basic skills and on clients' perceptions of program experiences and benefits. Exhibit 1.1 provides a brief description of the data collection instruments that serve as the primary sources of information for this report: the Universe Survey, the Comprehensive Program Profile, four types of forms on which program staff recorded data on individual clients, and the telephone follow-up survey. Appendix B contains a copy of the telephone follow-up survey; copies of the other data collection forms are included with the study's three interim reports.

The study called for collection of a substantial amount of information about each client, and not all the data sought were received. To compensate for the incomplete information, we limited the data base to those programs and clients that supplied reasonably complete intake and update records and then took two steps:

1. **Adjusted sampling weights**--We assigned clients sampling weights based on the likelihood of their being selected for the study. Each client's likelihood of selection was based on the probability that the client's program was selected, that the specific instructional delivery site was selected, and that any given client at the site was selected. Program nonresponse required us to adjust the originally assigned sampling weights. The effect of these adjustments was to maintain the nationally representative nature of the study's data base. The sampling weight adjustments, as well as estimates of standard errors for the data, are discussed in Appendix C.

2. **Imputed some responses**--For a small number of variables, we have used other responses from the same client to impute missing data. Generally, however, we have elected to let sample sizes vary in different analyses rather than to maintain sample sizes by imputing data.

Finally, we should point out that Client Intake Record: Part B and client attendance data could not be collected from two very large programs--Chicago and Miami. As described in Appendix C, we have investigated the potential effect of

these missing data on our analyses and, where appropriate, have made additional technical adjustments to correct for biases in the data (C-7).

Adding Perspective to the Evaluation: Some Challenges We Faced

Implementation of the study involved numerous challenges. They serve to supply valuable additional perspective to the findings as well as provide useful lessons for future evaluations of adult education programs.

What is a "program" for the purposes of the national evaluation? Despite its apparent simplicity, that question posed a challenge. For inclusion in the universe of adult education programs, each had to receive financial support through the basic grants provisions of the Adult Education Act. Receipt of such funds, however, did not adequately target the administrative entities that should be included in the evaluation. For example, more than one grant may be made to the same administrative agent, such as separate grants for the ABE, ASE, and ESL instructional components. Or sometimes a basic grant is awarded to a regional administrative service agency that has several subgrantees, some of which may be local school districts and other community-based organizations; and grantees exercise varying degrees of administrative control over the service delivery agencies.

Also deceptively simple was the question: Who is a client for purposes of inclusion in the evaluation? We defined a client as a person registered to receive ABE, ASE, or ESL services directly supported by Adult Education Act funds, or services similar in content to, and closely coordinated with, instruction directly supported by the Act. But how does one classify persons who receive ASE instruction in programs that received Act funds for use in ABE and ESL only? We classified them as clients for inclusion in the evaluation. And what is the status of those in programs that offered courses in vocational skills (e.g., electrical repair) and enrichment courses (e.g., parenting) only? Those persons were not included in the evaluation. Nor were those incarcerated in prison or jail. Generally, we also excluded clients in nursing homes.

We did, however, include clients who lived in homeless shelters, halfway houses, group homes, and other intermediate detention facilities. Also included in the evaluation were clients who changed classes within the same instructional component (such as from beginning ABE to intermediate ABE), who changed instructional components (for instance, from ESL to ABE), or who transferred from one instructional delivery site to another. The evaluation encompassed noncitizens as well, including illegal aliens.

And at what point in their instruction were persons defined as clients by programs? Some programs consider as clients all who complete their intake or registration process; others do so only for those who receive at least 12 hours of

instruction; still others use a point in-between. The evaluation gathered information on those who filled out a program's intake/registration form, which is completed by the client's second day of instruction.

Another challenge was the initial absence of information on program size, administrative organization, and instructional services offered. For example, a list of subgrantees was not available at the federal level, and information at the state level (where the operational definition of "local program" was not consistent across states) varied considerably in content and quality. Some programs did not have information on the composition of staff or the nature of the instruction provided at different sites. Nor did many programs have any idea of the number of adults newly enrolled each year or of the number of different individuals enrolled at any given time or over the period of a program year. Information that was on hand seemed to have been collected to comply with state services reimbursement and related reporting requirements. The only information available was that obtained through our Universe Survey, which gathered enough data for us to generate a sampling frame.

Designing a probability sample, essential to a rigorous evaluation, proved straightforward. But securing a sufficient number of programs to implement the design was another matter; that required us to be very flexible and persuasive. Initially, letters urging cooperation and participation were sent to selected programs by various agencies. Letters from state departments of education proved critically important in inducing participation by several programs. We followed up those letters with detailed information about the study, its requirements, and the incentives available to facilitate cooperation. We then contacted each program by telephone and began what often was a long and complicated process of negotiation.

Our goal was to enlist participation of 150 local programs. When data collection began, 141 programs had agreed to participate: 114 from the initially selected set of 150; 25 first order replacements; and 2 replacements of replacements. After ten months of data collection, 2 of the originally selected 150 had terminated operations, 3 had formally withdrawn from the evaluation, and another 5 had failed to submit data. Within the first 6 months of the evaluation, 16 percent of program directors trained in the requirements of the study had departed, sometimes because their positions had been abolished. Additional barriers overcome included resistance by most program directors to random selection of instructional delivery sites and of clients.

The evaluation plan placed a heavy data collection burden on participating programs. That was necessary, however, because we felt that the most feasible and economic way of obtaining information on an ongoing basis over the 30-month data collection period was to use local program staff. To ease the burden as much as possible, we offered incentives and allowed substantial flexibility as circumstances warranted. For instance, incentives included reimbursement for extra staff hours

expended on data collection, encouragement from state departments of education, and psychological rewards (e.g., publicity and supporting letters from education agencies). Among situations requiring flexibility was the testing of clients for literacy achievement. We offered free CASAS tests to programs, along with training and scoring services. Even so, that was not acceptable to many programs. In those cases, we agreed use the TABE, ABLE, and BEST tests, as appropriate, and as a last resort, we let them participate in the study without providing us with achievement test scores (see chapter 3).

(Available on request is a paper that explores in detail the foregoing challenges, among others, and how they were addressed by evaluation staff.[1])

Organization of This Report

This report has five chapters. Following this introductory chapter, the report addresses the following major questions, among others:

- How many persons enroll in ABE, ASE, and ESL? How many are new clients? How long do they persist in the program? What factors contribute to client persistence? (Chapter 2.)

- What are client literacy outcomes as measured by standardized achievement tests? What is the relationship between hours of instruction and other measured variables to learning outcomes? (Chapter 3.)

- What is the evidence that participation in the program results in employment and other meaningful outcomes? What is the relationship between hours of instruction and other measured variables to their outcomes? (Chapter 4.)

- How well is the overall program meeting target population needs/demand nationwide? To what extent is the program reaching the major segments of its target population? Is program capacity adequate? What would it take to significantly impact on client needs? (Chapter 5.)

---

[1] "Description of Problems and Issues Encountered During the National Evaluation of Adult Education Programs." Address requests to Development Associates, Inc., 1730 North Lynn Street, Arlington, VA 22209-2023.

Exhibit 1.1
Primary Sources of Information for This Report

- The **Universe Survey** surveyed all federally supported adult education instructional service providers. Conducted in the fall of 1990, it obtained data from 2,619 (93 percent) of the local programs receiving federal basic state grants funds in the program year ending June 30, 1990.

- The **Comprehensive Program Profile** sought more detailed information about program structure, instruction, and operations than the information obtained in the Universe Survey. A Program Profile was obtained from 131 of the 139 local programs that agreed to participate in the longitudinal phase of the evaluation. For programs that provided client-level data from more than one instructional site, we obtained data pertaining to instructional variables from site directors, and we used site-level data rather than program-level data in the analyses.

- The **Client Intake Record: Part A**, which was completed for each sampled client, provides basic demographic information on the client as well as program information, such as placement level, scheduled start date, and local intake procedures used for the client. Program staff completed the form from program intake records. Analyses in this report are based on data for 22,548 clients from 116 local programs.

- The **Client Intake Record: Part B**, which was to be completed for all sampled clients who attended at least one instructional session, collected more detailed information--on client characteristics, including receipt of public assistance, living arrangements, and employment status--than Part A contained. Part B also asked clients to rank, by importance, 14 reasons for taking adult education instruction. Spanish versions of the form were provided as needed. This report draws on data from 13,845 clients in 108 local programs.

- The **Client Update Record** provides instructional and attendance data and was completed at 5- to 8-week intervals by local program staff for each client who received instruction during the reporting period for up to 18 months from the time of entry into the program. Analyses in this report are based on data from 18,461 clients in 110 local programs.

- The **Client Test Record** provides scores on tests of basic skills given near the time of enrollment and after varying numbers of hours of instruction. Analyses are based on pretest scores from 8,581 clients in 88 local programs, and posttest scores from 1,919 clients in 65 programs across the United States.

- The **Telephone Follow-up Survey** provides information about the quality of the instruction, reasons for termination, and the results of instruction from a subsample of clients 6 months after they left the program. Data from 5,401 clients from 109 local programs are used in this report.

Chapter 2
PATTERNS OF ENROLLMENT AND PERSISTENCE

The central purpose of the National Evaluation of Adult Education Programs was to evaluate the potential for programs funded through the Adult Education Act to reduce significantly deficits in the adult population with respect to literacy, English proficiency, and secondary education. Accomplishing that purpose required information on (1) the number of clients served and the amount of services they received; (2) the extent to which those clients benefitted from the program services; and (3) the relationship between the number of clients benefitting from the program and type of benefits received and the extent of the target population's need and demand for the program's educational services. This chapter provides information on the first of those topics. Essentially, we found that during the period of the study (1991-1993):

- the program served between 2.6 and 3.2 million clients annually, with about 2 million of them newly enrolled;
- about 46 percent of clients were enrolled in ESL, 30 percent in ASE, and 24 percent in ABE;
- about 15 percent of clients who enroll in the program never actually receive instruction;
- the median number of hours of instruction for clients who received 1 hour of instruction or more was 58 hours;
- the median number of hours of instruction received by clients enrolled in ESL was about 3 times that of those enrolled in ABE (113 and 35 hours, respectively) and 4 times that of those enrolled in ASE (28 hours); and
- about 76 percent of the total number of instructional hours received was by clients in ESL, about 13 percent in ASE, and 11 percent in ABE.

More detail on some of the topics addressed in this chapter, including tables providing estimates of client persistence and analyses of possible predictors of client persistence, can be found in the study's third interim report.

Outreach and Recruitment Activities

The Adult Education Act specifies that

> adult education means services or instruction below the college level for adults: (a) who are not enrolled in secondary school; (b) who lack sufficient mastery of basic educational skills to enable them to function effectively in society or who do not have a certificate of graduation from a school providing secondary education and who have not achieved an equivalent level of instruction; (c) who are not currently required to be enrolled in school; and (d) whose lack of mastery of basic skills results in an inability to speak, read, or write the English language, which constitutes a substantial impairment of their ability to get or retain employment commensurate with their real ability and thus are in need of programs to help eliminate such inability.

Among adult education professionals, an area of long-standing concern is how to reach those persons with the greatest need. For many years researchers in the field have been concerned about the extent to which programs are serving people who are the easiest to reach, rather than those who might be considered "most in need" (Mezirow, Darkenwald, and Knox 1975; Beder 1991). As we discuss in chapter 5, we conclude that the program is serving a population that needs adult education services, that there is an overall youth bias in the program, which is appropriate given the stated purposes of the act, but that there is a bias, particularly in the West, toward clients who need ESL services which may work to the detriment of other segments of the population. Here we briefly describe the techniques that programs use to reach potential clients and the ways clients report they learned about the programs.

The proportions of programs using various recruitment techniques are shown in exhibit 2.1. The proportion of programs using any one of the techniques ranges from 34 percent to 92 percent. Three techniques used by more than two-thirds of the programs are announcements in mass media, recommendations by current clients, and contacts with supervisors or counselors. Almost all (92 percent) programs that predominantly serve ABE clients report that they contact potential clients' supervisors or counselors. Programs that serve predominantly ESL or ASE clients are less likely (75 and 71 percent, respectively) to use this approach and somewhat more likely to use announcements in mass media. In general, programs predominantly serving ESL clients are less likely to use a wide variety of recruiting techniques than programs predominantly serving ABE or ASE clients.

Exhibit 2.1
Proportion of Programs Using Various Recruitment Techniques By Predominant Instructional Component[a]
(*N* = 131)

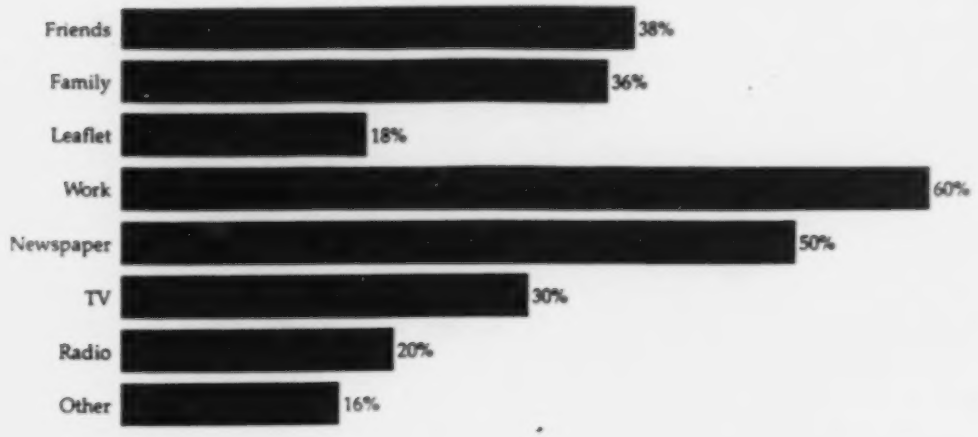
Recruiting Technique	Percent of Programs			
	ESL	ABE	ASE	Overall
Announcements in mass media	85 %	66 %	75 %	70 %
Recommendations by current clients	76	61	74	66
Contacts with supervisors or counselors	75	92	71	77
Referrals from other agencies	74	73	54	63
Local residents used as recruitment aides	68	52	52	56
Recruitment by cosponsoring groups	49	76	62	68
Fliers, posters, mailings	47	63	58	58
Staff member assigned to recruitment	44	57	61	57
Organized recruitment by current clients	37	64	51	53
Other[b]	11	9	31	17

[a] Programs were defined as predominantly of one type if a plurality (but not necessarily a majority) of their clients were enrolled in that component. The distribution of programs by predominant instructional component is 21 percent ESL, 48 percent ABE, and 31 percent ASE.

[b] Respondents were provided the opportunity to specify two "other" ways they use to recruit potential adult education clients.

Clients' responses about how they learned about the program are presented in exhibit 2.2. Most learn about the program from friends or family members. Clients are least likely to learn about the program through the mass media, which, according to program directors, is the second most frequently used recruitment method. More specifically, clients report that they learned about the adult education program from the newspaper (5 percent), television (3 percent), or radio (2 percent). While these findings raise questions about the wisdom of program expenditures on mass media advertising, we have no information about how clients' friends and family learned about the program. Particularly for ESL and ABE clients, recruitment may be a multistep process, and the mass media may be an effective way of reaching potential clients' families and friends.

Exhibit 2.2
Percent of Clients by How They Learned About the Program
(*N* = 13,835)



Number of Clients Being Served

Estimating the number of adult education clients the program serves in a year is more complex than estimating the number served at any one point in time. Individual clients may enroll, interrupt or discontinue, and reenroll in programs at various times during any given year. Furthermore, federal reporting requirements define an adult education client as someone who has received 12 or more hours of instruction. As a result, careful recordkeeping by local programs is required for state-level information to be accurate, and the extent to which local programs are able to track individual students varies considerably.

The study plan involved selecting a nationally representative sample of new clients, using a multistage selection procedure. This sample resulted in a national estimate of 2,016,288 **new** clients entering adult education programs over the 12-month period between April 22, 1991, and April 21, 1992.

To develop national estimates of the **total** number of clients that received one or more hours of instruction over a 12-month period, we took several additional steps. It was necessary to take into account clients who were systematically excluded from the sampling frame (e.g., those in prisons, hospitals, and homes for the retarded), clients who were in programs and instructional sites that opened after the sample was drawn, clients who were inappropriately counted or not counted at all because of program reporting errors, and clients who entered the program in previous years and were receiving instruction when our survey began.

After adjusting the data for the circumstances just described, we estimate that between 2.6 and 3.2 million adult education clients received 1 or more hours of instruction during the 12 months between April 22, 1991 and April 21, 1992. Exhibit 2.3 presents the basis for these estimates, beginning with the number of **new** clients. Of the 2.6-3.2 million clients who received 1 or more hours of instruction, approximately 84 percent or 2.2-2.7 million received 12 hours or more of instruction.

Some 46 percent of new clients enrolling in adult education during this period enrolled in ESL classes; ASE accounts for 30 percent of new clients; and ABE accounts for the remaining 24 percent. Of clients who received one hour of instruction or more:

- 51 percent are in ESL,
- 30 percent in ASE, and
- 19 percent in ABE.

Over the past 15 years the proportion of ESL clients has been increasing while the proportion of clients in the other two components has decreased. In 1979, about 19 percent of the program's clients were enrolled in ESL, 37 percent in ASE, and 44 percent in ABE (Young et al. 1980).

The distribution of all clients by census region shows that 40 percent live in the West, 30 percent in the South, 19 percent in the North Central region, and 11 percent in the Northeast. As exhibit 2.4 shows, 82 percent of clients in the western states enrolled in ESL, while less than 25 percent of clients in each of the other three census regions enrolled in ESL.

Exhibit 2.3
High and Low Estimates of the Number of Clients Receiving 1 or More Hours of Instruction Over a 12-Month Period

	High Estimate	Low Estimate
1. Number of newly enrolled clients based on study sample	2,016,288	2,016,288
2. Possible reporting problems (± 10%)	+201,629	-201,629
3. Number of clients who enrolled but never received instruction (-15%)	-324,106	-265,178
4. Number of clients excluded from the sampling frame:		
a. clients in prisons, hospitals, and other institutions (+12 % of clients with instruction)	+227,257	+185,938
b. clients in programs that began after the sample was drawn[a]	+6,000	+6,000
c. clients in instructional delivery sites that opened after the sample was drawn[b]	+28,000	+28,000
5. Number of clients already being served when the study year began[c]:		
a. clients who entered the program 1 to 12 months earlier and were still active at the start of the intake year (+35% of new clients, i.e., steps 1-4)	+755,895	+618,460
b. clients who entered the program 13-24 months earlier and were still active at the start of the intake year (+8.9% of new clients, i.e., steps 1-4)	+192,104	+157,176
c. clients who entered the program 25 or more months earlier and were still active at the start of the intake year (+3% of new clients, i.e., steps 1-4)	+64,754	+52,981
Total number of clients served	3,166,226	2,599,631

[a] Number of clients in excluded programs (4.b) is based on sampled programs that closed prior to data collection and on discussions with state directors indicating that approximately equal numbers of small programs open and close each year.

[b] Number of clients in excluded sites (4.c) is based on contact with program directors regarding sites that opened during the study period.

[c] Numbers of clients already being served (5.a, 5.b, 5.c) are based on extrapolations from 18 months of attendance data (see the second interim report for discussion of procedures used).

Exhibit 2.4
Enrollment by Instructional Component and Region of Country
(*N* = 22,548)

Instructional Component	Percent of Clients				
	Northeast	North Central	South	West	Overall
ESL	24 %	21 %	20 %	82 %	46 %
ABE	35	37	39	4	24
ASE	41	42	41	14	30
Overall	100 %	100 %	100 %	100 %	100 %

Patterns of Client Enrollment

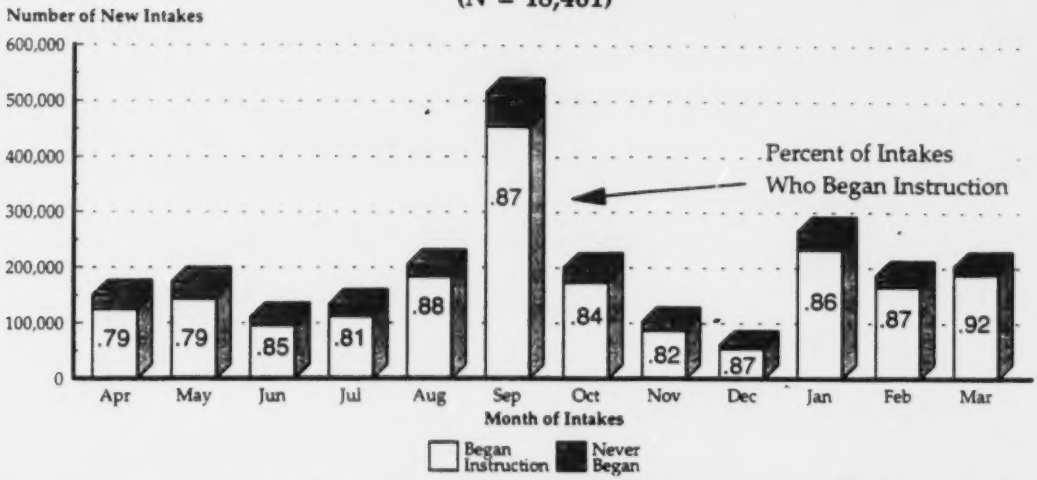
Despite program descriptions that emphasize an "open-entry, open-exit" instructional design, the enrollment and attendance pattern for most adults is consistent with the traditional fall entry/summer exit pattern of elementary and secondary schools or the September-January-March community college enrollment cycle. September and January are the months of greatest intake, with August and March providing the next highest numbers. Estimates of the proportion of intakes by month and instructional component are presented in exhibit 2.5.

Exhibit 2.5
Proportion of New Clients by Month of Enrollment
(*N* = 22,548)

	Percent of Clients			
Month	ESL	ABE	ASE	Overall
January	11 %	10 %	14 %	12 %
February	8	6	10	8
March	13	5	7	9
April	6	6	6	6
May	5	11	7	7
June	4	7	5	5
July	4	9	5	5
August	13	6	6	9
September	24	21	21	22
October	7	10	10	9
November	3	6	6	4
December	2	3	3	3
Total	100 %	100 %	100 %	100 %

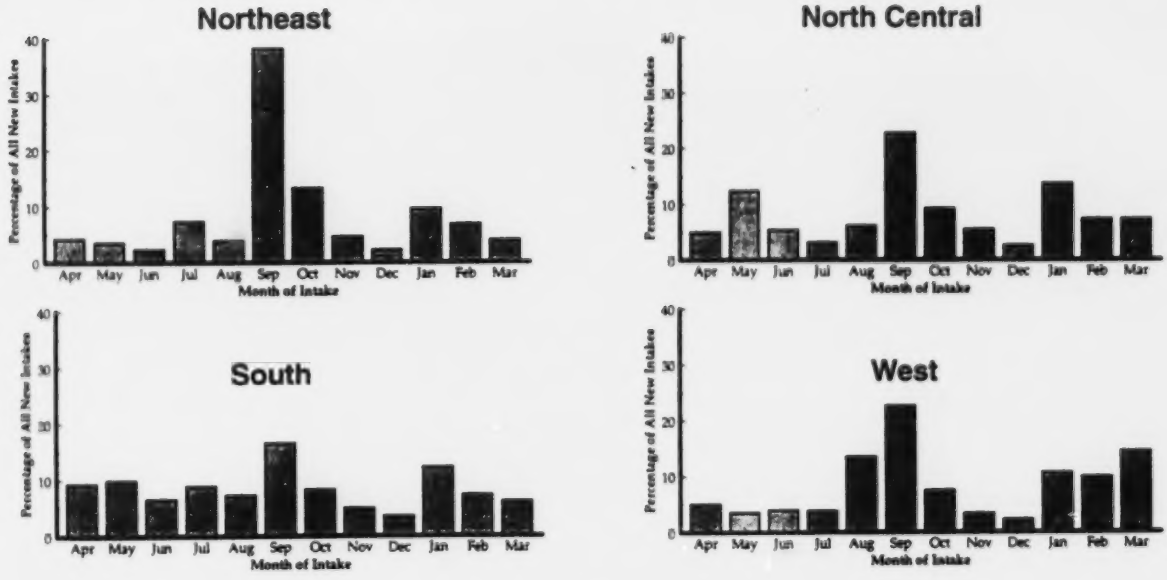
About 15 percent of the clients who enroll for adult education services do not actually begin instruction. Exhibit 2.6 shows the proportion of clients who began instruction by month of enrollment. About 92 percent of clients who enrolled in March started instruction, while about 80 percent of May enrollees started instruction. Some 48 percent of ESL, 59 percent of ABE, and 55 percent of ASE local adult education programs take a 2- or 3-month summer break, and clients who enroll in programs in April and May may decide not to begin instruction because they know instruction will end within the next 6 to 8 weeks.

Exhibit 2.6
Instructional Status of Clients by Month of Enrollment
(*N* = 18,461)



As with other aspects of the adult education program, enrollment patterns vary by region of the United States. As exhibit 2.7 shows, programs in the Northeast enroll nearly 40 percent of their annual new clients in September, while programs in the South enroll clients more consistently throughout the year.

Exhibit 2.7
Variations in Enrollment Patterns
By Region and Month of Enrollment
(*N* = 22,548)



Besides regional variations in monthly patterns of enrollment and variations by type of instructional program, the time of day clients choose to receive instruction varies regionally as well. As shown in exhibit 2.8, a considerably larger proportion of clients in the West are enrolled in daytime classes only. The West also has the highest proportion of clients who were enrolled in ESL (82) and the highest proportion employed at the time of intake (46 percent). Apparently a large proportion of the clients in the West work at night and attend classes during the day. In contrast, in the Northeast only 29 percent of beginning ESL clients attend classes during the day only. The regional findings may reflect the types of jobs held by persons with limited English language skills in the two parts of the country.

Exhibit 2.8
Proportion of Clients Enrolling in Daytime Classes Only, By Region and Initial Level of Instruction
(*N* = 15,701)

Instructional Component	Percent of Clients in Daytime Classes Only			
	Northeast	North Central	South	West
ESL-beginning	29 %	63 %	57 %	68 %
ESL-advanced	48	62	56	57
ABE-beginning	55	41	52	61
ABE-intermediate	66	53	53	56
ASE	41	51	46	52
Overall	47	52	50	63

Patterns of Client Persistence

Throughout this report, we use the term persistence to identify a client's total amount of participation in the adult education program, but participation in adult education programs can be measured in various ways. In this report we use the following measures:

- **Total weeks of enrollment**. The number of weeks between the start and the end of services, regardless of the amount of services received during that period.

- **Total hours of instruction**. The number of hours a client actually attends classes or receives some other instructional service.

- **Total weeks of instruction**. The number of weeks during which a client actually attends class.

Although there is a relatively high correlation[2] among the three measures, they are conceptually and operationally distinct, and results differ somewhat, depending on the measure used. For this report, most analyses are in terms of total weeks of enrollment or total hours of instruction.

With respect to median hours of instruction for clients who received 1 hour of instruction or more, as exhibit 2.9 shows:

- The median for all three components is 58 hours. ESL clients had the highest median hours of instruction (113), followed by ABE clients (35) and ASE clients (28).

- The West had the highest median hours of instruction with 107. This finding is directly related to the high proportion of ESL participants in the West (82 percent). The Northeast had the next highest median hours of instruction with 50.

- The median for ESL clients was higher than for ABE or ASE clients, especially in the West, which had a median of 136 hours. ASE clients in the South had the lowest median hours of instruction (24) across all components and all census regions.

In terms of total hours of instruction received, clients in ESL classes account for approximately 76 percent; ASE, 13 percent; and ABE, 11 percent. That is, over three-fourths of the client seat hours supported by the Adult Education Act are provided to clients enrolled in the ESL component.

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[2] The correlation across all components between total weeks of enrollment and total weeks of instruction is .91 and between total weeks of instruction and total hours of instruction is .85. A correlation matrix showing the relationship among these variables overall and by component is presented in the third interim report.

Exhibit 2.9
Median Hours of Instruction of Clients
Who Received 1 Hour or More
(*N* = 15,870)

Region	Hours			
	ESL	ABE	ASE	Overall
North Central	57	25	34	34
Northeast	77	58	33	50
South	62	30	24	30
West	136	36	25	107
Total U.S.	113	35	28	58

The persistence rates for those clients who received at least 1 hour of instruction are displayed in exhibit 2.10. As this graph shows, rates for ABE and ASE are nearly identical, with ABE clients continuing at a slightly higher rate than their ASE counterparts. The curves demonstrate that over time fewer and fewer clients attend.

During the first year, the rate of decline for ESL is considerably different from ABE or ASE. Whether calculated in weeks or hours, ESL clients receive substantially more instruction during the first 12 months following enrollment than do clients enrolled in ABE or ASE. Shortly into the second year of instruction, the number of ESL clients continuing to receive instruction declines fairly sharply, and by the end of the 18-month follow-up period, the rates for the three components have nearly converged.

Exhibit 2.10
Persistence Rates in Weeks for Clients Who Received 1 Hour or More of Instruction by Instructional Component

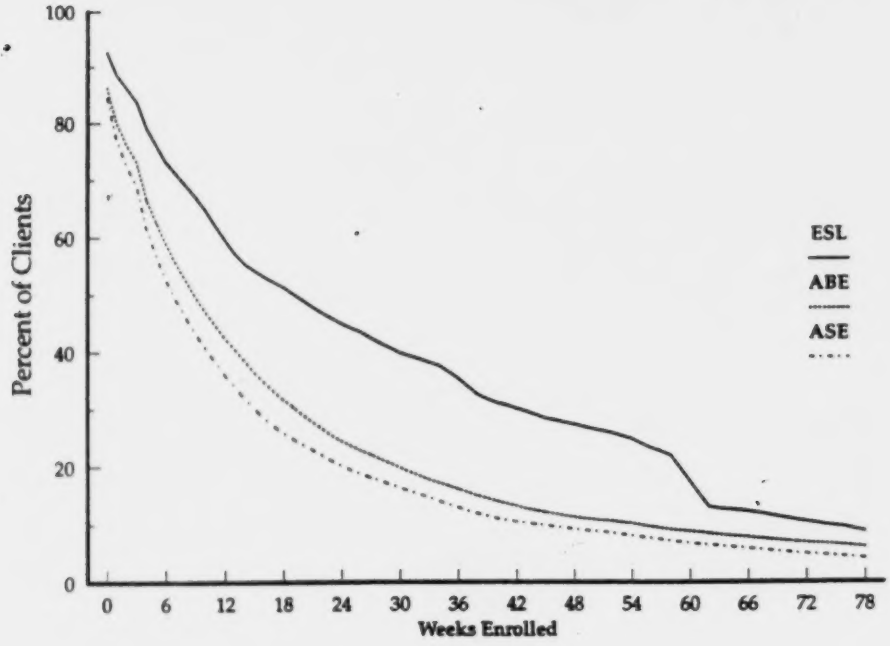


Exhibit 2.11 details the average number of weeks of enrollment in each of the three program components by month of enrollment, and overall. Clients entering the program in August had the highest average number of weeks of enrollment in all three instructional components; ESL clients entering in August had the highest average number of weeks of enrollment (40), followed by ABE clients (28) and ASE clients (23).

Exhibit 2.11 further illustrates that clients in ESL stay enrolled in programs longer than ABE or ASE clients. Overall, ESL clients averaged 30 weeks of enrollment, compared with 20 weeks for ABE and 17 weeks for ASE clients. Across the three components, the average is 24 weeks for clients to be enrolled. When assessed in terms of census region, we find that there is much less variation in the length of enrollment in the South, regardless of the instructional component, than in other regions, and that the West had the highest average number of weeks of enrollment across all three components (see appendix D, exhibit D.9).

Of all new enrollees, 38 percent enrolled for less than five weeks. Although many clients who do not complete their first month receive no instruction at all,

about 23 percent of all clients begin receiving instruction but leave within 5 weeks of when they enrolled. By component, the proportion of new enrollees who begin receiving instruction but leave within their first 5 weeks is about 26 percent for ABE, 30 percent for ASE, and 19 percent for ESL.

Exhibit 2.11
For ESL, ABE, ASE: Mean Number of Weeks Clients Remained Enrolled, by Enrollment Month

Component	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Overall
ESL	28	28	37	37	22	29	26	40	23	27	22	32	30
ABE	19	19	15	16	18	21	21	28	22	19	17	16	20
ASE	15	15	13	15	14	14	14	23	20	18	18	18	17

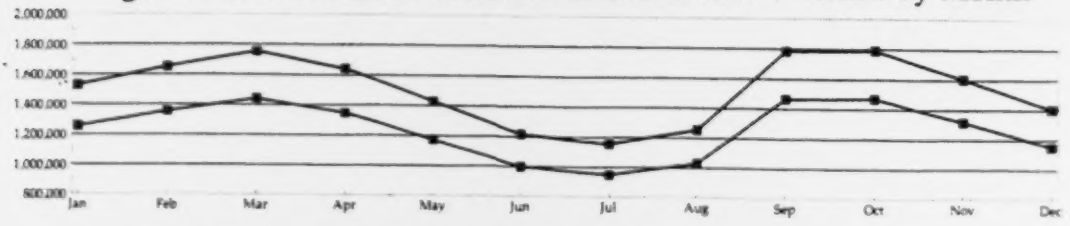
Note: Number of weeks of enrollment is defined as the number of weeks that elapsed between initial instruction and final departure of the client from the program. In Appendix D, exhibit D.9 shows data above by census region.

Additional detail on client flows is presented in Appendix D. The first four tables in the appendix show the proportion of all new clients exiting the program at specified numbers of months after they enrolled. These tables show, for example, that regardless of when they enroll, clients are most likely to leave the program during their first month. Of the clients who enter the program in August or September, 29 percent leave the program before completing 1 month.

Also included in Appendix D are tables which provide estimates of the persistence of all new clients in terms of a hypothetical group of 100,000 new enrollees. The data in the persistence tables show the same trends as described above. The declining rate of departure indicates that the initial month of contact is crucial for long-term persistence. On average, clients complete about 5 months of instruction between when they enroll and when they leave the program. However, if clients make it into their second month, they are likely to complete another 7 months, for a total of 9 months of instruction.

Exhibit 2.12 presents estimated fluctuations in the total number of active clients over a 12-month period. The number of clients reaches its low point in July and peaks in September/October and March.

Exhibit 2.12
High and Low Estimates of Total Number of Active Clients by Month



Note: The estimates involve alternative assumptions about implementation of the original sample design and establishment of new programs.

Program Factors Contributing to Client Persistence

As we discuss in greater detail in chapter 3, attending class for many hours is not necessarily related to achieving meaningful learning gains. In chapter 3 of the third interim report, we presented the results of analyses that identified major predictors of receiving a relatively large number of instructional hours.[3] Predictors and causes, of course, are not necessarily the same, and it is important to keep this distinction firmly in mind when reviewing the findings presented below.

We found that several variables within the control of local programs are important predictors of the number of hours of instruction that clients receive. Across all three components, the following program factors were the strongest predictors of persistence:

- the presence of support services that clients actually use;
- the receipt of instruction during the day as opposed to evening hours; and
- the type of learning environment in which the clients participate.

Use of support services is a strong predictor for all instructional components. The presence of such services may well explain why some clients can sustain their participation in adult education and others cannot. We found that about 25 percent of clients use at least one type of support service. The support services most frequently used were counseling (16 percent), financial assistance (7 percent), and transportation (7 percent). Clients in programs that provided five types of services or more received, on average, 115 hours (and 19 weeks) of instruction, whereas clients

[3] Logistic models were developed to identify predictors of persistent attendance for clients in each of the program's three instructional components. In these models, clients who took 12 hours or more of instruction in the first three attendance quartiles were compared with clients who were in the fourth quartile (the persisters).

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in programs that provided four types of support services or less received, on average, 60 hours (and 17 weeks) of instruction.

We also looked at the degree to which services are integrated (i.e., how well the educational services are coordinated with services provided by other agencies, and the breadth of the services). Integration of services was classified as high, medium, or low. The relationship between our measure of integration of services and client persistence was most clear for the ABE instructional component. ABE clients are more likely to persist in programs that score well on integration of services.

The second particularly strong program factor—receiving instruction during the day—is predictive of persistence for all three instructional components. Regardless of component, clients who attend classes only during the daytime are the most likely to persist, and those who attend only at night are the least likely. While the time of day that instruction is received is highly predictive of sustained program attendance, it almost certainly is not the primary cause. Rather, it is likely that clients who are free to attend classes during the day can attend classes for more hours at a time (morning and afternoon class sessions often last longer than those at night) and can attend more frequently. Also, ability to attend classes during the day generally is a function of family or employment characteristics, which may be the real explanation for our results. While such factors were included in our analyses, it is reasonable to believe that their importance was hidden because no one or two such reasons were predominant.

How the third particularly strong factor—a client's learning environment—is related to persistence differs by instructional component. ESL clients whose instruction includes independent study or participation in a learning lab environment are more likely to persist than those whose instruction is only classroom based. Participation in a learning lab rather than only classroom-based instruction is also predictive of persistence for ASE clients, but having a program that includes independent study is not. ABE clients whose instruction is provided only in a teacher-based classroom are more likely to persist than those whose instruction also includes independent study. It may be that ABE clients need the structure and nurture provided by teacher-based classrooms and are not yet ready for the combination of classroom and independent study or lab settings in which ASE and ESL clients are most likely to thrive.

Three additional program variables predict persistence for two of the three instructional components. Class size, for example, is a predictor of persistence for ESL and ABE clients, but is not for clients in ASE. ESL clients are more likely to persist when enrolled in large classes, whereas ABE students are more likely to persist in classes of medium to large size (more than 10 clients). Our finding, particularly with respect to ESL, may be more reflective of common than exemplary

practice. ESL students tend to persist longer than those in ABE or ASE, and ESL programs tend to be at or above capacity enrollment and to have large classes, whether they are particularly predictive of learning outcomes or not.

Having at least one full-time administrator **and** one full-time instructional staff member associated with the program is a strong predictor of persistence for ESL and ASE clients. We suspect that having such a staff configuration increases the quality of instructional staff training, supervision, and support, which we assume should also be the case for ABE.

The cost of instruction was also found to be related to persistence, but in somewhat surprising ways. To estimate the cost of providing instruction the evaluation collected information by mail survey from all participating programs on the cost of service provision. In addition, there was a special cost study consisting of case studies of 12 programs selected to be nationally representative in terms of number of clients served, size of annual budget, type of sponsoring institution, and geographic region. On the basis of the case studies and survey data, we estimate that cash cost per hour of instruction is $4.57.[4] For the purposes of the analyses of persistence and learning gains presented in this report, we categorized programs in terms of cost as "average," "above average," and "below average," on the basis of one standard deviation above or below the mean hourly cost ($\sigma \doteq \$2.80$).

Spending more per hour of instruction is not positively related to persistence. Client cost per seat hour is not a predictor of persistence for ESL, although as will be seen in chapter 3, it is predictive of learning gains. Similarly, although low cost per seat hour is predictive of persistence for ASE clients, high cost per hour is predictive of instructional gains. For ABE, average costs are predictive of persistence, but persistence per se is not predictive of learning gains. We suspect these findings with respect to cost per hour are a reflection of instructional environment and staff configurations. What seems to be important is how money is spent, not simply that more is made available.

Other Predictors of Client Persistence

In addition to those program factors, two personal characteristics predict client persistence: race/ethnicity and age. Race/ethnicity predicts persistence in all three

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[4] Across the 12 case study programs the cash cost per seat hour ranged from $0.82 to $9.80, and the total (cash plus noncash) cost ranged from $1.61 to $9.84. The mean cash cost of an hour of instruction in the 12 case study sites was $4.57, with a standard deviation (σ) of $2.80. Using the responses from the mail survey of local program directors plus information from our national sample of clients we found that client cost per hour of instruction was $4.48. For the three instructional components, on the basis of the more detailed case study data, we calculate the mean costs per hour as: ESL = $4.28 ($\sigma$ = $3.84), ABE = $6.11 ($\sigma$ = $3.47), and ASE = $5.12 ($\sigma$ = $2.69). Copies of the special cost study report may be obtained by contacting the Department of Education or the study authors at Development Associates, Inc.

program components. In ABE and ASE we found that Asians/Pacific Islanders were more likely to persist than non-Hispanic whites. In addition, Hispanics were more likely to persist in ABE than non-Hispanic whites. In the ESL component, we found that non-Hispanic whites were more likely to persist than Hispanics. Also, we found that age was not a substantial predictor of persistence for clients enrolled in ASE or ESL; but ABE clients over the age of 30 were more likely to persist than younger clients.

Throughout all instructional components, the following personal variables were *not* predictors of persistence: sex, marital status, welfare status, prior education, whether enrollment was required or voluntary, and the client's primary purpose for enrolling.

Summary and Conclusions

In this chapter, we note that the outreach and recruitment techniques used by more than two-thirds of the programs are announcements in mass media, recommendations by current clients, and contacts with supervisors and counselors. However, most clients learn about the program directly from friends or family members.

We find that most clients enroll in September and January. Enrollment, however, does not guarantee that clients will actually attend class or begin instruction. The proportion of enrollees actually beginning instruction varies somewhat by month. For example, 92 percent of clients who enrolled in March received 1 or more hours of instruction, while only 79 percent of clients who enrolled in April or May began instruction.

Enrollment patterns also vary by U.S. census region. Programs in the Northeast enroll nearly 40 percent of their new clients in September, whereas programs in the South enroll clients at a fairly consistent rate throughout the year. The time of day that classes are scheduled also varies by region. Clients are more likely to be enrolled in daytime-only classes in the West than in any other region.

Regarding patterns of client persistence, we found that ESL clients stay in their programs longer and receive more hours of instruction than ABE or ASE clients. ESL clients average 30 weeks of enrollment, compared with 20 weeks for ABE and 17 weeks for ASE clients. ESL students receive substantially more instruction during the first 12 months of enrollment than students in ABE or ASE.

To identify predictors, we used logistic regression to compare data on clients in the first three attendance quartiles to clients who were in the fourth quartile. We found that the strongest predictors are factors over which local programs have some control—program structure and design—rather than personal client characteristics.

Our study revealed that the strongest predictors of persistence across all components are:

- the presence of support services that clients actually use;
- the receipt of instruction during the day as opposed to evening hours; and
- the type of learning environment in which clients participate (but the type of environment that was most predictive was not the same for all three instructional components).

There is an understandable tendency to think of student persistence as an appropriate measure of program effectiveness. The assumption is that the longer clients spend in adult education programs, the more likely they are to accomplish their objectives or the objectives the program has set for them. As we discuss in the context of analyses of client outcomes presented in chapters 3 and 4, however, the relationship between client retention and program effectiveness is complex. For some clients it is appropriate to equate time spent in adult education with progress toward learning gains or other desired objectives, but for other clients it is not.

Chapter 3
CLIENT LITERACY OUTCOMES AS MEASURED BY STANDARDIZED ACHIEVEMENT TESTS

Adults enroll in instructional programs for many reasons, but according to the National Literacy Act, federally supported local programs are intended to enable participating adults to:

1. acquire the basic educational skills necessary for literate functioning;

2. benefit from job training and retraining programs and obtain and retain productive employment; and

3. continue their education to at least the level of completion of secondary school.

This chapter presents findings on client learning gains pertinent to the first of these three objectives. Specifically, this chapter is concerned with literacy outcomes measured by the reading subtests of the CASAS (California Adult Student Assessment System) and the TABE (Test of Adult Basic Education). While the learning gains of adult students participating in the federal Adult Education Program are described here, the main emphasis is on identifying factors that directly contribute to these gains within each of the three program components (ESL, ABE, and ASE).[5] Findings on other indicators of client learning--employment outcomes, and other client benefits of program participation relevant to the second and third objectives of the Act--are presented in chapter 4.

A primary aim of the learning gains analysis was to estimate the effects of instruction by determining whether student achievement was related to attendance in adult education (see Study Objective 7 in Appendix A of the report). Because a quasi-experimental design was unfeasible, a regression analysis framework was used to assess the effects of instruction and other factors on student achievement. Under the regression framework employed in the learning gains analysis, posttest performance was the outcome of interest and the regression coefficient associated with total hours of instruction represented the overall effect of adult education instruction. Indicators of student attendance were therefore viewed as pivotal to the

[5] Analyses of ESL learning outcomes were based on CASAS data since programs overwhelmingly used the CASAS in testing ESL students. Similarly, analyses of ABE and ASE learning outcomes were based on TABE scores since programs most often used the TABE in testing ABE and ASE students. The CASAS is a criterion-referenced test whereas the TABE is a norm-referenced test.

analysis of client literacy outcomes since the logic of the evaluation was that "learning gains" should be a positive function of student "persistence" in the program.

The Availability and Quality of Test Data

Based on intake records received from 101 programs agreeing to provide us with test data,[6] we estimated that matched test scores (i.e., pretest and posttest scores for the same person from the same test) were potentially available for 19,796 clients. All 101 of these programs actually did provide pretest data, but only for 57 percent of the potential base number of clients (i.e., 11,354 out of 19,796). Thus, the actual base of test scores was roughly half of what we expected. The achievement test data base was further reduced, severely so, in attempting to obtain posttest scores for those clients who had been pretested. While matched pretest and posttest scores were provided by 74 percent of the programs in the test sample (i.e., 75 of 101 programs), the number of matched scores obtained for clients on all tests constituted only 12 percent of the potential total number of clients originally expected (i.e., 2,333 out of 19,796). Almost all of the matched test scores were from the CASAS or the TABE (n = 2,315). For this reason, the learning gains analyses were restricted to these two tests.

Using several selection criteria, including known client placement and test content validity (i.e., the test administered must adequately measure the local program's curriculum as judged by the degree to which the content of the test matches the content of the curriculum), five potential analysis groups were formed from the 2,315 clients with matched CASAS and TABE scores. The selection criteria used in forming the five groups, particularly the content validity criterion, reduced the test sample from 2,315 to 1,642 clients. The five potential analysis groups constituted 8 percent of the total expected test sample and provided data from the two principal tests and all three instructional components of the Adult Education Program.[7] Two of the five test samples were limited in size and were subsequently dropped from further consideration.[8]

The learning gains analyses were conducted with the three remaining test groups, consisting of 1,331 clients representing 7 percent of the number of clients for

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[6] Local programs were asked to report pretest data using the Intake B Record. Posttest data were to be reported on the Progress Record after 70 and 140 hours of instruction. In addition to the CASAS and the TABE, programs could also report test scores from the Adult Basic Learning Exam (ABLE) and from the Basic English Skills Test (BEST).

[7] Consideration of a sixth group -- ESL-TABE -- was unrealistic because this sample consisted of only 10 ESL clients.

[8] The following samples were dropped because of their relatively small size: an ABE-CASAS sample of 121 clients and an ASE-CASAS sample of 190 clients.

whom test score data potentially could have been available. The ESL-CASAS group, the largest, comprised 685 clients. The next largest group -- ASE-TABE -- consisted of 454 clients. The smallest group was ABE-TABE, consisting of 192 clients.

Exploratory analyses revealed a number of problems in the test data, which in our opinion, invalidated the scores for over half of the clients in the three final analysis groups. Exhibit 3.1 summarizes the validity problems and the extent to which they affected these three analysis groups. The proportion of cases affected by floor and ceiling effects is indicated by a range statistic in exhibit 3.1 since matched scores could be lost by either an inaccurate pretest or an inaccurate posttest.

Exhibit 3.1
Summary of Validity Problems and Their Effects on Test Score Attrition

Validity Problem	ESL-CASAS (N = 685)	ABE-TABE (N = 192)	ASE-TABE (N = 454)
Non-Reading Test	4%	--	--
Floor Effects	<1%	1-2%	<1%
Ceiling Effects	13-18%	32-33%	50-65%
Invalid Pretest	30%	3%	9%
Total Number of Cases Affected	n = 336 (49%)	n = 81 (42%)	n = 300 (66%)
Final Sample Size	N = 349	N = 111	N = 154

Scores measuring areas other than reading were not germane to the analysis; they were a minor problem and affected only 4 percent of the ESL-CASAS group. The presence of "floor effects" in all three samples was another validity problem whose impact on the test data was relatively minor. Floor effects are represented by chance-level scores on a test (defined in the learning gains study as a raw score of less than 30 percent correct) and indicate that the test level administered was too difficult for the student; the resulting score simply does not provide an accurate measure of the student's level of achievement. Less than 2 percent of the cases in the three final analysis groups showed floor effects.

The opposite problem -- "ceiling effects" -- had a major impact on the validity of test scores, particularly for ASE students administered the TABE. Ceiling effects (defined in the study as a raw score in excess of 85 percent correct) generate measurement error because the test is too easy and therefore does not provide an

accurate assessment of student achievement.[9] By far, ceiling effects on the posttest (particularly with the TABE) provided the single greatest threat to the validity of test scores in the learning gains study. For example, despite that more than 90 percent of the ASE group was administered the top two levels of the TABE, more than a third of the Level D (Difficult) posttest scores and over half of the Level A (Advanced) posttest scores were in the ceiling range of the TABE. In contrast, the TABE appeared to be somewhat more suited to measuring reading achievement with the ABE group, the vast majority of whom took the middle two levels of the test. Nevertheless, almost half of the ABE students taking the moderate-difficulty level of the TABE (Level M) posttested in the ceiling range.

The other major validity problem was that of invalid baseline measures as reflected by an unreasonable amount of instructional time preceding the administration of the pretest. This problem had its greatest impact on the ESL-CASAS sample where 30 percent of the students received in excess of 50 hours of instruction before being given the pretest. The ABE and ASE samples were much less affected by the problem of invalid baseline measures despite that the criterion for a valid pretest in these two groups was much more conservative (i.e, no more than 7 hours of instruction prior to the pretest).

The final analysis sample consisted of 614 clients, or approximately 3 percent of the total potential test sample.[10] Appendix E contains a detailed technical treatment of methodological issues related to the learning gains analysis, including additional information on the quality of the test score data and how these considerations affected the determination of the final analysis groups.

The Learning Gains Analyses

A weighted analysis strategy was employed (based on a set of revised sampling weights) to adjust for non-random subsamples in each of the three program components. The reweighting adjustments provide an improved basis for generalizing the results of the learning gains analysis to the population of adult students participating in the federal Adult Education Program. Although clients in the final analysis samples attained a greater number of instructional hours, on average, compared to their counterparts in the overall study sample, the weighted

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[9] In the exploratory analyses, measurement error produced by ceiling effects invalidated the ASE regression model. Only by removing the ceiling effect was it possible to develop a valid model of ASE achievement. See Appendix E for further detail.

[10] The final regression analyses are based on data from 614 clients (ESL-CASAS = 349; ABE-TABE = 111, and ASE-TABE = 154) from 44 local programs located in 20 states (ESL = 8 states; ABE = 16; ASE = 14).

data included in the final analyses are generally representative of the program as a whole.[11]

One-sample t-tests were computed to examine the statistical significance of gain scores for each of the three program components. The t-test results are displayed in exhibit E.5 of Appendix E. In addition, analysis of covariance (ANCOVA) was used to examine the statistical significance of differences in adjusted posttest means associated with participation in the three principal instructional environments (i.e., classroom-only versus lab-only versus classroom plus lab)[12] within each program component. Independent variables shown by regression analysis to be significant predictors of posttest performance were used as covariates in the ANCOVAs. The ANCOVA results are displayed in exhibits E.9 through E.11 of Appendix E.

Separate ordinary least squares multiple regression models were developed to identify direct effects influencing literacy outcomes in the ESL, ABE, and ASE components of the program. Each regression model involved a seven-block hierarchical analysis strategy consisting of the following independent variables:

1. The client's background characteristics (sex, age, race/ethnicity, and educational attainment).

2. An indicator of whether the client was required by his employer or anther program (e.g. JOBS) to participate in the program (as opposed to enrolling for some personal reason).

3. The client's pretest reading scale-score.

4. A set of variables relating to program characteristics (curriculum design, client's use of support services, presence of full-time staff, whether the majority of teachers were certified or had 3 or more years of experience in adult education, and the cost per client seat hour of instruction).

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[11] See exhibits E.1 through E.3 in Appendix E for a comparison of the weighted analysis samples with the weighted total study samples for each of the three adult education components.

[12] Environment was measured as a categorical variable in the ANCOVA procedure (i.e., being a participant in one of three instructional settings) whereas in the regression analysis, environment was measured as a continuous variable (i.e., hours of instruction in a particular environment). The rationale for the ANCOVA was to determine whether exposure to a particular instructional setting per se (after statistically removing the influence of other factors such as differences in student entering ability) resulted in different literacy outcomes, or whether the effect of environment depended on the amount of instruction in a particular setting (as examined by the regression analysis).

5. The mean class size across instructional environments and reporting periods.

6. Measures of instructional intensity and attendance in each of four instructional settings between the pretest and posttest: (a) the mean number of instructional hours per week a student received; (b) the number of hours of instruction each client received for classroom instruction only, lab only, independent study only, and class plus lab.[13]

7. The total hours of instruction received between pretest and posttest, across all instructional environments.

Principal findings from the regression analyses about direct effects on literacy outcomes for adult education clients are summarized below for each program component. These findings are supplemented by the ANCOVA results on the differential effectiveness of adult education instructional environments. The complete statistical results of the regression analyses are presented in Exhibits E.6, E.7, and E.8 of Appendix E. The reader should note that all references to CASAS and TABE test scores are in terms of scale scores.

Preview of Findings

As this chapter will show, clients in each of the three program components generally improved their reading ability. Other than client entering ability (as measured by the pretest score), there is little overlap across program components in the predictors of literacy outcomes. Exhibit 3.2 shows, for example, that race/ethnicity was predictive of ESL and ASE literacy outcomes; however, race/ethnicity did not influence ABE literacy outcomes. In the area of program characteristics, cost per hour of instruction had a direct effect on literacy outcomes for ESL and ASE

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[13] The variables measuring learning environment are derived from item 4 of the Update Record with respect to a client's predominant participation in one of the following.

Lab Only:	Computer-assisted or Learning Lab.
Classroom Only:	Class with teacher only or with teacher and aide.
Independent Study:	Self-study or Tutor.
Class Plus Lab:	Class with teacher or with teacher and aide, and computer-assisted or learning lab.

clients; again, there was no relationship between this factor and literacy outcomes for the ABE component. As a third example, overall program attendance as measured by total hours of instruction was found to be significantly related to literacy outcomes for ESL students only. All of those factors found to be predictive of client literacy outcomes, as summarized in exhibit 3.2, are discussed at length in subsequent sections of this chapter, particularly those sections which review the principal findings for each instructional component.

Exhibit 3.2
Factors Influencing Literacy Outcomes for ESL, ABE, and ASE Clients Based on Three Multiple Regression Models

Class of Predictors	ESL Model (R Sq = .70)	ABE Model (R Sq = .70)	ASE Model (R Sq = .49)
Client Characteristics	Race/Ethnicity Education Pretest Score --	-- -- Pretest Score Required Enrollment	Race/Ethnicity -- Pretest Score --
Program Characteristics	Cost -- -- --	-- Curriculum Full-Time Staff --	Cost -- -- Committed Staff
Attendance and Instructional Environment	Total Hours Intensity	-- -- Lab-Only Hours Class-Only Hours	-- -- -- --

Magnitude of Learning Gains

Clients who participated in the federal Adult Education Program generally increased their reading achievement as indicated by pretest-posttest gains measured by the CASAS and TABE. Reading achievement gains were statistically significant for each of the three program components (see exhibit E.5 in Appendix E).

On the basis of the results of the weighted ESL analysis, we estimate that ESL clients received a mean of 120 hours of instruction (between the pretest and posttest) and attended classes for an average of 14 weeks. Exhibit 3.3 indicates that the average ESL client gained 5 scale-score points on the CASAS reading test. As a group, ESL clients began instruction with low literacy skills and would generally have been capable of holding only entry-level jobs. The CASAS posttest performance of ESL clients suggests that, as a group, they had improved their reading skills in

functionally useful ways important to surviving in society and would now be capable of holding jobs, or participating in job training, requiring the comprehension of simple text information (Rickard 1988).

The results of the ABE analysis indicate that ABE students received a mean of 84 hours of instruction (between pretest and posttest) and attended classes for an average of 15 weeks. Exhibit 3.3 indicates that the average ABE client gained 15 scale-score points on the TABE reading comprehension test. On the basis of, the weighted ASE analysis, we estimate that ASE clients received a mean of 63 hours of instruction and attended class for an average of 11 weeks. Exhibit 3.3 indicates that the average ASE client gained 7 scale-score points on the TABE reading comprehension test. The reading ability of the ABE clients at the beginning of instruction was equivalent to that of an elementary school student at the beginning of the sixth grade (GE = 6.1), whereas the ASE clients generally entered adult education with the reading ability of a secondary school student at about the mid-point of the eighth-grade school year (GE = 8.5).[14] After instruction, ABE students were reading at a level equivalent to that of a student at the end of the first semester of seventh grade (GE = 7.4); ASE students were reading at a ninth-grade level following instruction (GE = 9.3).[15]

Exhibit 3.3
Mean Test Scores and Gains for ESL, ABE, and ASE Clients

Analysis Group	Test	*N*	Pretest		Posttest		Gain	
			Mean	(σ)	Mean	(σ)	Mean	(σ)
ESL	CASAS	347	207	(15)	212	(15)	5*	(10)
ABE	TABE	110	728	(38)	743	(31)	15*	(23)
ASE	TABE	154	755	(19)	762	(17)	7*	(14)

σ = Standard deviation

* Statistically Significant (p = .00)

[14] Grade Equivalent (GE) scores are an often-used reference point for interpreting tests in adult education. The GE scale (.0 through 12.9) represents the 13 years of school at the elementary-secondary level (K-12) and the 10 months of the traditional school year, using September (.0) and June (.9) as the beginning and end points.

[15] Grade equivalents should be interpreted as status measures reflecting performance equivalent to students in the norm group (of the California Achievement Test, in the case of the TABE) who have completed a particular month of instruction in a graded program. Since GEs are not based on an interval scale of measurement, gain score interpretations are inappropriate. For further information, see the TABE Norms Book and Table 71, published by CTB-McGraw-Hill, 1990.

The Importance of Pretest Reading Performance

As a preface to discussing the regression results, it should be noted that the strongest factor -- and the only common factor -- influencing literacy outcomes (i.e., posttest reading performance) in all three program components was the pretest reading achievement score. In education, the pretest is often found to be the strongest predictor of posttest performance and this is one reason it is often used as a control variable (as it was in this study of learning gains). The pretest score is also considered by many educational psychologists to represent student entering ability (in the sense of an initial performance level) since it is often found to be statistically related to a variety of background influences on achievement that include educational attainment, intelligence, and prior knowledge relevant to what is being measured by a test.

The influence of initial reading level (as represented by the pretest) on literacy outcomes (as represented by the posttest) was strongest in the case of ABE students where approximately 61 percent of the variance in the posttest scores was directly attributable to entering ability; that is, over half of the performance of ABE students on the posttest can be explained by their performance on the pretest. In the case of ESL students, almost half (48 percent) of their learning gains can be accounted for by initial achievement levels. Literacy outcomes were least influenced by entering ability among ASE clients; here, the pretest accounted for only 19 percent of posttest performance.

ESL Literacy Effects

Six factors were identified that directly influence ESL clients' reading achievement. In the area of client characteristics, direct effects were found for race/ethnicity, prior educational attainment, and entering ability as measured by pretest reading score. Cost per client seat hour was the only measured program characteristic to be predictive of ESL literacy outcomes. In the area of program attendance and instructional environment, both total hours of instruction and hours of instruction per week were found to be significantly related to ESL reading achievement.

It should be kept in mind that each of the effects discussed below represents average effects on CASAS reading posttest performance after controlling for the influence of the 15 factors measured by the 19 variables entered hierarchically in the ESL regression model.

Client Characteristics. Almost half (48 percent) of the variance of the reading achievement (posttest scores) of ESL students can be accounted for by their initial

level of English reading achievement.[16] On average and everything else being equal, white ESL students are estimated to score higher on the CASAS reading posttest compared to Hispanic ESL students. ESL students with higher levels of prior education are also estimated to achieve higher levels of English literacy on average.

Program Characteristics. Students attending ESL programs with high costs per seat hour (i.e., greater than $4.57 per client per hour of instruction) can be expected to perform higher on the CASAS reading posttest compared to ESL students attending average-cost programs. ESL students in average-cost programs are also expected to achieve a higher level of literacy compared to their peers in low-cost programs.

Program Attendance and Instructional Environment. Only for ESL students was total hours of instruction significantly related to reading achievement. On average and everything else being equal, the **unique contribution** of program attendance (as measured by total hours of instruction) to the impact of ESL instruction is an increase of 1 scale-score point on the CASAS reading test for approximately 40 hours of ESL instruction.[17] The reader should keep in mind that there are other factors in addition to program attendance which contribute to the five-point average gain for ESL clients. One such factor is intensity of instruction as measured by hours of ESL instruction per week. Intensity of instruction, however, was found to be negatively related to reading achievement.

As a follow-up, analysis of covariance was used to determine whether literacy outcomes differed significantly across the three principal learning environments (i.e., class-only, lab-only, and class-plus-lab), irrespective of the amount of instruction in those environments. The results of the ANCOVA analyses for ESL (see exhibit E.9 in Appendix E) indicated that type of learning environment -- considered independently of the amount of instruction within an environment -- did not produce significantly different learning outcomes for ESL students when other significant influences on learning were statistically controlled. Having thus established that reading achievement does not differ based on the mere exposure of ESL students to a particular type of instructional setting, we then established through further regression analysis that the effect of total hours of instruction primarily reflects the effect of hours of instruction within the dominant ESL learning environment: the classroom-only setting. Therefore, it is primarily the amount of instruction within an ESL

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[16] The standardized regression coefficient (beta) for the ESL pretest effect is .69; squaring this beta value yields .476, or approximately 48 percent.

[17] The unstandardized regression coefficient for total hours of instruction is .025 (see exhibit E.6 in Appendix E). The estimate of 40 hours was obtained by dividing unity (i.e., one) by this value (i.e., 1/.025 = 40).

classroom environment that make a difference in promoting positive literacy outcomes for ESL clients.

In summary, overall program attendance (as measured by total hours of instruction) was found to have a positive impact on literacy outcomes for ESL students. The impact of overall attendance in the ESL program largely reflects student persistence in the dominant ESL instructional environment: participation in classroom-only instruction. In addition, program cost per hour of instruction, the client's level of prior educational attainment, entering achievement level, and race/ethnicity (if white rather than Hispanic) were all positively related to literacy outcomes for ESL students. Finally, intensity of instruction (as measured by hours per week) was found to be inversely related to ESL literacy outcomes.

ABE Literacy Effects

Five factors were identified that directly influence ABE clients' reading achievement. In the area of client characteristics, both entering ability (as measured by pretest reading score) and enrollment motivation (whether voluntary or required) were found to be related to ABE literacy outcomes. Literacy effects related to program characteristics were found for curriculum design (if highly individualized) and for the presence of full-time staff. In terms of client attendance within particular instructional environments, negative effects were found for client persistence in lab-only and classroom-only instruction.

In reviewing each of these considerations below, it should be kept in mind that the results pertain to average effects on TABE posttest reading performance after controlling for the influence of the 15 factors measured by the 19 variables entered hierarchically in the ABE regression model.

Client Characteristics. Over half (61 percent) of the variance of the posttest reading achievement of ABE students can be accounted for by their initial level of reading achievement.[18] In terms of enrollment motivation, TABE posttest reading performance is estimated to be significantly lower for ABE clients who were required to attend adult education compared to those who enrolled voluntarily. ABE clients required to enroll in adult education are also about twice as likely to be welfare recipients compared to those ABE students who enroll voluntarily.

Program Characteristics. Students participating in ABE programs offering highly individualized curricula are estimated to score significantly higher on the TABE posttest compared to ABE students enrolled in programs described by staff as offering less individualized or more structured curricula. ABE clients in programs

[18] The standardized regression coefficient (beta) for the ABE pretest effect is .78; squaring this beta value yields .608, or approximately 61 percent.

with at least one full-time administrator and one full-time instructional staff member (full-time staff) are also estimated to score significantly higher on the TABE posttest, on average, compared to ABE clients in programs with no full-time staff.

Program Attendance and Instructional Environment. An overall effect of total hours of instruction on ABE client literacy outcomes was not observed. Neither was there an effect of instructional intensity (hours of instruction per week). However, the amount of instruction in lab-only and class-only instruction was found to be inversely related to reading achievement. That is, compared to a combined classroom and lab environment, persistence in lab-only and classroom-only environments had a negative effect on literacy outcomes for ABE students: posttest reading achievement decreased with increasing amounts of instruction in these two learning environments.

Some practitioners might be tempted to explain the negative effects of persistence in the lab-only and classroom-only environments by appealing to an argument which assumes that it must be the lower-ability students who persist longer in these two settings. While this is true in the ABE classroom-only environment, it must be recognized that the regression analysis controlled for entering ability. Thus, the negative effect of persistence in the classroom-only environment cannot be explained by lower-ability students staying longer (even though they do). In the case of the lab-only environment, it was actually the higher-ability students who persisted longer (87 hours versus 76 hours, on average).

The follow-up ANCOVA analyses showed that type of ABE learning environment, per se, has no measured effect on adjusted posttest scores. However, the ABE regression model indicated that persistence in particular learning environments (i.e., the lab-only and classroom-only environments) is associated with detrimental effects on reading achievement for ABE students. Furthermore, it is interesting to note that a negative effect of persistence was not observed for the class-plus-lab environment. A theoretical interpretation of these findings would suggest that the achievement of positive literacy outcomes for ABE clients may be facilitated more by classroom plus lab rather than by classroom-only or lab-only instructional settings.

In summary, overall program attendance (as measured by total hours of instruction across type of instructional environment) was not found to have an impact on literacy outcomes for ABE students. Furthermore, required attendance and persistence in lab-only and class-only instructional environments were found to have negative impacts on ABE reading achievement. Positive influences on ABE literacy outcomes included the clients' entering level of reading achievement and local program practices associated with highly individualized curricula and full-time staff.

ASE Literacy Effects

Four factors were identified that directly influence ASE clients' reading achievement. In the area of client characteristics, effects were found for race/ethnicity and for pretest reading score. With respect to program characteristics, cost per client seat hour was found to be positively related to ASE literacy outcomes, whereas programs characterized by experienced (i.e., "committed") ASE staff showed negative effects on client literacy outcomes compared to programs whose staff had less experience in adult education. Length of program attendance and differences in instructional environment were not found to have an influence on ASE client literacy outcomes.

Again, the reader should keep in mind that the following discussion is about estimates of average effects on TABE posttest reading performance after controlling for the influence of the 15 factors in the ASE regression model.

Client Characteristics. Entering student ability as measured by pretest score was found to have a relatively small effect on ASE literacy outcomes, accounting for approximately 19 percent of the variance of ASE client reading achievement, on average. Everything else being equal, Asian students participating in ASE are estimated to score significantly higher on the TABE reading posttest compared to white ASE clients on the average. Alternatively, black non-Hispanic ASE students are estimated to score significantly lower on the TABE reading posttest than white non-Hispanic ASE clients.

Program Characteristics. Students attending ASE programs with high costs per seat hour (i.e., greater than $4.57 per client per hour of instruction) are estimated to score significantly higher on the TABE reading posttest compared to ASE students attending average cost programs. ASE students in average-cost programs are also expected to achieve a higher level of literacy compared to their peers in low-cost programs. Perhaps surprisingly, ASE students in programs where a majority of teachers are certified in adult education or have at least three years of adult education teaching experience scored significantly lower, on the TABE reading posttest, on average, compared to ASE students in adult education programs not so characterized. The expectation that programs with experienced or certified staff should produce better literacy outcomes compared to programs not so characterized was not borne out by the data.

Program Attendance and Instructional Environment. As with the ABE component, an overall effect of attendance (total hours of instruction) was not observed for ASE students with respect to impacts on client literacy. Neither was there observed any effect related to intensity of instruction or to participation in different types of instructional environments.

In summary, positive impacts on ASE literacy outcomes were found for (1) client race/ethnicity (if Asian compared to white, or if white compared to black), (2) clients' level of initial reading achievement, and (3) program cost per student per hour of instruction. ASE programs in which a majority of the teachers are certified in adult education or have at least three years of teaching experience in adult education (i.e., "committed" programs) were not found to be associated with better literacy outcomes.

Summary and Conclusions

Clients in each of the three instructional components improved their reading achievement during the time they participated in adult education. ESL clients gained an average of 5 scale-score points on the CASAS reading test while ABE and ASE clients gained an average of 15 and 7 scale-score points respectively on the TABE reading comprehension subtest.

With few exceptions, client literacy outcomes were found to be influenced largely by different factors in each of the three adult education components. One exception was the influence of entering student ability: pretest score was the strongest predictor of reading achievement in all three instructional components. The closest the data come to offering a common prescription for effective program practices is in the area of cost. In both the ESL and ASE components, higher cost per student-hour of instruction was found to be positively related to client learning gains.

Total hours of instruction was observed to be related to client literacy outcomes only in the ESL component. In both the ABE and ASE programs, total hours of instruction was not significantly related to client literacy outcomes. In short, instructional effects associated with client persistence were observed for ESL students but not for ABE and ASE students.

A common assumption among education policy makers is that if the amount of instruction provided increases, there will be a corresponding increase in "on-task" time by students and that student achievement will therefore increase. The results of our analyses with respect to the relationship between persistence and instructional effects are not clear-cut, however. We suspect that the relationship between hours of instruction received and measured instructional effects may involve the interaction of program characteristics with instructional time in ways that this study did not fully measure.

The need to conceptualize program effectiveness in ways that are context-specific is evident from the fact that program-related instructional effects were generally very specific to each of the three adult education components. In the ESL component, cost and total hours of instruction were the significant program factors that positively influenced client literacy outcomes, and the program factor measuring

intensity of instruction (i.e., hours of instruction per week) was negatively related to ESL literacy outcomes. For ABE students, program factors positively related to reading achievement included curriculum designs which were highly individualized and programs with at least some full-time staff. It would also appear that student persistence in ABE instructional environments which combine classroom and laboratory instruction may be optimal for facilitating client literacy outcomes. The only program variable found to be predictive of literacy outcomes in more than one instructional component was cost per hour of instruction. The cost factor was observed to have positive effects on client literacy outcomes in both the ESL and ASE components.

Recommendations

In closing this chapter, it is important to comment on the limitations of the learning gains study. First, the learning gains analysis was exploratory and design tradeoffs had to be made in data collection in order to maximize program cooperation and participation with respect to other objectives of the national evaluation (e.g., to describe the federal Adult Education Program and patterns of attendance and persistence as opposed to emphasizing assessment and instructional issues). Second, the final analysis samples were relatively small, which in large part reflects the quantity and quality of the test data reported by local programs. This is not to say that local program staff are generally incompetent in the area of client assessment. Rather, our experience should be viewed as signaling that there are problems with assessment practices in adult education which have to do with local program capability, local testing procedures, as well as the quality of the standardized assessment instruments currently available.

We suspect that there are four fundamental problems in adult education assessment which need to be better understood if similar evaluations are to be attempted in the future:

- **Need for Technical Assistance:** The Adult Education Program, because of the part-time nature of its staffing, staff turn-over, and lack of staff training in assessment, is unlikely to produce good test data without technical assistance. We suspect that the problem of floor and ceiling effects could have been reduced had functional-level testing been practiced by local programs. Yet even with technical assistance, the capability for generating adequate assessment data remains questionable because most local programs simply do not have the staff resources and person-hours to devote to assessment.

- **Obstacles to Testing:** Clients often do not like to be tested, and in some cases, because of the open-entry/open-exit nature of client attendance, they cannot be. Also, adult education clients complete their programs

of study relatively quickly which often results in lost assessment opportunities.

- **Dissatisfaction with Available Instruments:** Adult education staff tend to dislike the assessment process and the available instruments. This is understandable in view of the need for greater measurement sensitivity in tests like the TABE, where ceiling effects are apparently a major problem. The measurement accuracy problem in adult education is compounded by the wide range of individual performance differences which appear to be much greater than that generally measured by current instruments. The pervasiveness of ceiling effects encountered in the learning gains study suggests that test developers could improve the measurement accuracy of current adult education assessment instruments by expanding test levels designed to measure higher levels of adult achievement.[19]

- **Lack of Consensus in the Field:** Testing practices vary widely from state to state and from one locality to another. The consequence is that there are few, if any, standards for guiding appropriate assessment practices in adult education. In California, for example, professional opinions are extremely divergent about appropriate ESL baseline assessment practices.

Until the above assessment issues are resolved, evaluation in adult education will remain problematic. What is clearly needed in future evaluations of adult education is greater research control over the outcome data, regarding not only the choice of research design but also to the provision of local training in assessment procedures that can be monitored. Our impression is that most adult education programs need technical assistance in assessment and would be receptive to such help. Finally, in the interest of producing high-quality program research that meets the need for both internal and external validity, it might be best to focus future adult education impact evaluations on small-scale demonstrations.

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[19] In the learning gains study, ASE students scoring within the ceiling range of the TABE had a significantly higher level of prior educational attainment compared to ASE students measured more accurately by the TABE. This was not the case for ABE students. This finding suggests that the TABE could be made more sensitive in measuring higher levels of adult achievement by adding a fifth level of item difficulty geared toward higher-ability ASE students. It may also reflect the possibility that a substantial number of ASE clients enter the program already possessing the requisite skills for a GED (28 percent of the 2,250 ASE clients with pretests scored at the 12.9 grade level on the TABE), and that for them the program serves more as a credentialing than as an educational function.

Chapter 4
EDUCATIONAL ATTAINMENT AND EMPLOYMENT-RELATED OUTCOMES

Adults enroll in instructional programs to achieve any number of objectives,[20] including the three specified by the Adult Education Act applicable to federally supported local programs: (1) to enable clients to acquire basic education skills necessary for literate functioning; (2) to benefit from job training and retraining programs so that they can obtain and retain productive employment; and (3) to offer clients the opportunity to continue their education to at least the level of completion of secondary school.

The extent to which clients have acquired basic education skills can be assessed in a number of ways. In chapter 3, we presented findings on client gains in reading achievement as derived from standardized test data. Two additional types of evidence related to the acquisition of basic education skills are presented in this chapter. These include findings about client advancement in instructional placement and findings about client perceptions of the extent to which the program helped them improve basic education skills. In general, beginning students advanced the most in placement levels and over half of all participants (54 percent) believed that the program had helped them "a lot" in acquiring one or more basic skills.

Employment-related benefits of program participation are also reported in this chapter. Specifically, we present findings on net employment gains and client perceptions of employment-related benefits attributable to the program for those who were employed and unemployed when they enrolled. We estimate a net gain of about 6 percentage points in employment for program participants. Typically, what participants learned in the program helped them to retain employment or to improve their performance in the job they had prior to enrollment rather than helping unemployed participants to find a job.

We also report estimates regarding the extent to which clients completed secondary education and continue on to higher education. Depending on the criteria used, we conservatively estimate that adult education enabled between 11 and 30 percent of the ASE participants to complete their secondary education (or, 4 to 12 percent of all participants). We also estimate that 17 percent of the former clients are currently continuing their education and that at least 7 percent of the program's

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[20] For a discussion of client motivations for enrolling in adult education programs, see pages 52-55 and Appendix D in Young, et al. (September, 1993). Second Interim Report of the National Evaluation of Adult Education Programs: Profiles of Client Characteristics. Arlington, Virginia: Development Associates.

participants were enrolled in post-secondary education 6 months after leaving the federal Adult Education Program.

In addition to providing estimates on the extent to which clients benefitted with respect to the three objectives specified by the Adult Education Act, this chapter presents findings on enhancement of client self-image, increases in the frequency of clients' reading to young children in their household, and clients' reasons for leaving adult education. As reported later in this chapter, we found that approximately 70 percent of the clients accomplished personal goals related to the enhancement of self-image. We also found a net increase of 15 percent in the number of clients who read more often to their young children. For ABE and ESL clients, the primary reasons for leaving adult education are related to events external to the program, usually pertaining to changes in employment; ASE students most often leave adult education because they completed their program of study.

The Telephone Survey

Most of the data and analyses in the chapter are based on the telephone follow-up survey. Before reviewing the education and employment-related findings, several characteristics of that survey are important to note. The follow-up survey was completed by telephone with a sample of 5,401 clients[21] from 109 local programs; these respondents had completed a Client Intake Record Form B and were known to have been out of the program for 6 months. All 5,401 of the clients in the telephone follow-up survey were asked to confirm their participation in the adult education program, to indicate the number of classes they attended, and to tell us the major reason(s) they left their class or instructional program. The bulk of the telephone survey, however, reflects the views of 4,653 respondents (86 percent of those contacted) who attended at least three adult education classes. These survey items focused on client perceptions of program benefits related to basic skills, employment or other areas; plans for further education; and the nature and quality of the instruction they received. The subsample of clients who attended at least three classes represents, when weighted, a national population of 736,259 clients, or about half of active new clients. As described in Appendix C, the weighting of the telephone survey essentially adjusts the results for non-response bias. After the weight adjustments were applied to the telephone survey, respondents are very similar to the clients in the national sample who began instruction,[22] except for

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[21] Telephone interviews were attempted with a sampling frame of 10,500 clients. The 5,401 completed interviews reflect a 51 percent response rate.

[22] The weighted total telephone survey sample (N = 5,401) reflects an estimated national population of 862,508 new clients who enrolled in adult education between April 1991 and April 1992, and who had been out of the program for at least 6 months by April 1993. Eighty-six percent of the sample attended adult education for at least three classes; 11 percent attended for 1-2 classes; and 3

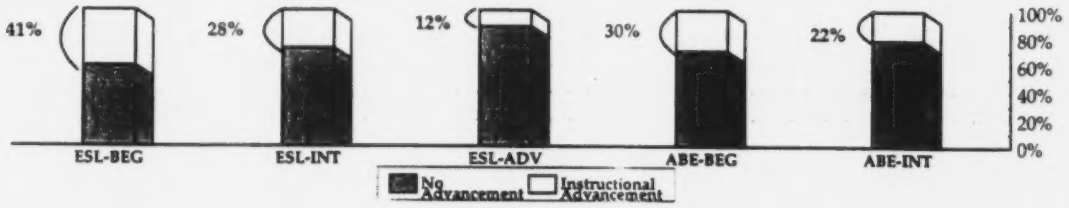
having received fewer hours of instruction and having been out of adult education for six months.

Benefits in Basic Educational Skills

As discussed in Chapter 3, new clients in each of the three instructional components improved their reading achievement during the time they participated in adult education. ESL clients gained an average of 5 scale-score points on the CASAS reading test. ABE and ASE clients gained an average of 15 and 7 scale-score points respectively, on the TABE reading comprehension subtest.

Changes in Placement Level. ESL and ABE clients also made gains with respect to changes in placement levels. (Because ASE is the highest instructional level, clients who entered in this component are excluded from this analysis.) In general, placement changes reflected advances in instructional placement and these were greater for beginning students compared to intermediate or advanced placement students. As noted in exhibit 4.1 below, 41 percent of the beginning ESL students advanced in placement level over the course of the study (most of whom advanced to ESL intermediate) and 30 percent of the beginning ABE students advanced in placement (most of whom advanced to ABE intermediate). This compares to advances in placement for 28 percent of the intermediate ESL group, 12 percent of the advanced ESL group (who went on to ABE or ASE), and 21 percent of the intermediate ABE group (who went on to ASE).[23]

EXHIBIT 4.1
Changes in Instructional Placement



Client Perceptions of Skill Improvement. Most clients indicated that improvement in literacy skills was a basic motivation for enrolling in adult education. For example, 79 percent rated improvement in reading/writing skills as very important while 69 percent rated improvement in speaking/listening skills as very important. In the follow-up survey, respondents were asked to rate the degree to

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percent dropped out of the program after enrollment without attending any classes.

[23] See exhibit 5.1 (chapter 5) for more detail.

which adult education classes or training programs had helped (a lot, somewhat, or not at all) to improve their skills in those areas which they had rated as very important at enrollment. These results are displayed in exhibit 4.2 for clients who indicated that adult education had helped them improve "a lot" in three specific areas of basic skills which they had rated as very important at intake.

Exhibit 4.2
Proportion of Clients Saying That Adult Education Had Helped Them "a Lot" in Basic Skills Rated as Very Important
(*N* = 3,803)

Basic Skill Areas	Percent of Clients			
	ESL	ABE	ASE	Overall
Reading and writing	44 %	50 %	45 %	46 %
Mathematics	26	51	49	42
Speaking and listening	48	48	45	47
Total helped in at least one skill area	62	68	63	64

Note: Exhibit 4.2 reflects follow-up responses of clients who had indicated at enrollment that a particular skill area was **very important** to them; percentages in exhibit 4.2 do not reflect the ratings of all clients in the follow-up sample.

The percentages in the bottom row of exhibit 4.2 indicate that a majority of clients believe they were helped "a lot" in at least one of the three basic skills areas rated as very important to them; overall, 64 percent of these clients had been helped "a lot" by adult education instruction. Since improvement of basic math skills was of primary importance to ABE and ASE students but not to ESL students, it is not surprising that only 26 percent of the ESL clients indicated great improvement in the area of math skills. Considering the responses of all clients, irrespective of their importance ratings for improvement in basic skills, the percentage helped in at least one basic skill area is: 60 percent ESL, 61 percent ABE, 53 percent ASE, and 58 percent overall (see exhibit 4.22 at the end of the chapter).

Generally, client opinion about improvement in basic reading skills was consistent with test score gains. As shown in exhibit 4.3, client opinion and test score gains in the area of reading improvement converged[24] for the majority of ABE, ASE,

[24] Convergence was defined as a match between client opinion of whether the program helped "a lot" in improving their reading or writing skills and a reading test score gain. A match was also scored if the client said the program helped them "somewhat" or "not at all" and their test score gain was zero or negative. Divergence was defined as a lack of a match between client opinion and test

and ESL students for whom both test score and follow-up interview data were available. Although the number of cases available for comparison is small, we are able to reject the hypothesis that the results, across the three instructional groups, are due to chance.

Exhibit 4.3
Consistency Between Client Opinion and Test Score Data Regarding Improvement in Basic Reading Skills
(N = 405)

Consistency Category	ABE (126)	ASE (196)	ESL (83)	Total (405)
Divergence	40%	45%	40%	42%
Convergence	60%	55%	60%	58%

Below, exhibit 4.4 compares the amount of instruction received by clients who reported being helped "a lot" (i.e., benefitted) in at least one area of basic skills with clients who did not indicate such benefits of instruction. As the exhibit shows, clients who reported having benefitted from adult education received considerably more hours of instruction than average. This appears to be particularly true for ABE clients.

Exhibit 4.4
Relationship of Amount of Instruction to Reported Benefits in Basic Skills*
(*N* = 3,803)

Program Component	Median Hours of Instruction		Median Weeks of Enrollment	
	Benefitted	No Benefit	Benefitted	No Benefit
ESL	105	88	18	12
ABE	46	24	12	7
ASE	35	28	10	8
Overall	48	30	10	8

* Clients who benefitted reported the program had helped them "a lot" in one or more skill area: reading and writing, math, or speaking and listening.

score change (e.g., positive opinion and negative or zero test gain).

Employment-Related Benefits

The desire to improve one's employability is a major motivation of many new clients who enroll in adult education. As we have reported elsewhere,[25] new clients motivated by employability goals are often interested in benefitting from adult education in one of two general ways. Those who are unemployed typically aspire to becoming employed and hope that adult education can help them achieve such employment. Alternatively, improving current job performance through the acquisition of new skills -- whether these be vocational skills, basic academic skills, or language skills -- is often a desire of those who are already employed when they enter adult education. Somewhat surprisingly, the highest degree of motivation for the enhancement of employability skills was among ESL clients. And consistent with that earlier finding, it is clear from the data reported in this chapter that ESL clients are also the ones who most often experience the employment-related benefits of participating in adult education.

At the time of enrollment in adult education, the labor force status of the follow-up sample (excluding those who attended fewer than three classes) was distributed as shown in exhibit 4.5 below. In general, a plurality of the new clients were employed when they began instruction. ESL clients were more likely to be employed at the time of enrollment than were ABE or ASE clients. Percentages in the Total column of exhibit 4.5 do not sum to 100 because of rounding.

Exhibit 4.5
Labor Force Status of the Follow-up Sample
At Enrollment in Adult Education

Status at Intake	ABE	ASE	ESL	Total
Employed	41%	42%	48%	44%
Unemployed	26%	29%	19%	25%
Not in Labor Force	33%	29%	33%	32%
Sample Size	*N* = 1096	*N* = 1696	*N* = 1596	*N* = 4388

Our strategy for the balance of this section is to describe the change in employment status between intake and follow-up by tracking those clients in the telephone sample who were in the labor force at the time of enrollment. Our principal interest is not only to examine changes in employment status (i.e., being either employed or unemployed) for those clients who entered adult education as members of the labor force but also to focus on what the clients claim to have gotten

[25] See Young, et al. (September 1993). Second Interim Report of the National Evaluation of Adult Education Programs: Profiles of Client Characteristics. Arlington, Virginia: Development Associates.

from participation in adult education as it affected their employability under four possible employment-change conditions: (a) ceasing to be employed; (b) remaining employed; (c) still not employed; and (d) changing from unemployed to employed.

Exhibit 4.6 provides a summary of the before- and after-employment status of the follow-up sample. Cell A indicates that 13 percent of all clients were employed at program intake, but were not working 6 months after they left adult education. Cell B shows that 50 percent of all clients were employed at intake and were also employed six months after leaving the program. Cell C indicates that 18 percent of all clients were unemployed at intake and were also unemployed six months after leaving the program. Finally, Cell D shows that 19 percent of all clients were unemployed at intake, but were employed six months after leaving the program.

Exhibit 4.6
Before-After Changes in Employment Status
For Clients in the Labor Force at Intake
(N = 3,042)

Before	After: Not Employed		After: Employed		
Employed	(A)	13 %	(B)	50 %	63 %
Unemployed	(C)	18 %	(D)	19 %	37 %
		31 %		69 %	

The data in the exhibit shows a net gain of six percentage points in employment rate, from 63 percent at intake to 69 percent at the time of follow-up, or six months after leaving the program. The difference is statistically significant. This is not to say that the increase in employment was caused by participation in adult education, merely that this was the amount of change in employment observed. However, we do examine in the following discussion the extent to which clients in each of these four cells attributed employment-related benefits to participation in adult education.

Clients Who Became Employed (Cell D). Clients who were unemployed at enrollment but who became employed 6 months after leaving adult education (19 percent of the clients in the labor force at intake) were asked in the follow-up interview if what they had learned in the program had helped them get their job. Based on the statistically significant responses (see exhibit 4.7 below), the overall answer is "no" since 57 percent (versus 43 percent) of these respondents indicated that program participation had not been instrumental in their having obtained employment. The overall perspective is primarily that of the ABE and ASE students.

However, the reader should note that two-thirds of the ESL respondents did, in fact, claim that what they had learned in adult education had made a difference in their becoming employed.

Exhibit 4.7
Changing From Unemployed to Employed:
"Did What You Learn in the Program Help You Get the Job?"

Client Response	ABE	ASE	ESL	Total
Yes	36%	38%	67%	43%
No	64%	62%	33%	57%
Sample Size	*N* = 111	*N* = 221	*N* = 87	*N* = 419

Clients Who Remained Employed (Cell B). Clients who were employed at intake and who had remained employed after leaving adult education (50 percent of those in the labor force at intake) were asked a number of questions about whether program participation had been beneficial to their employment situation. For example, clients who still held the same job as when they enrolled were asked if what they had learned in the program had been helpful to them in that job. The data on this issue are presented below in exhibit 4.8 and indicate that, again, it is primarily the ESL clients who benefitted from adult education with respect to their enhanced employability. Program participation was as likely as not to benefit ABE students in their employment situation, and a majority of ASE students indicated that program participation had not helped them in their job.

Exhibit 4.8
Remaining Employed:
"Did What You Learn in the Program Help You with That Job?"

Client Response	ABE	ASE	ESL	Total
Yes	48%	40%	88%	61%
No	52%	60%	12%	39%
Sample Size	*N* = 233	*N* = 360	*N* = 392	*N* = 985

A number of clients were also working a second job in addition to the one they held when entering the program. These clients were asked in the follow-up interview if what they had learned in the program had helped them get that second job. These data are displayed in exhibit 4.9, the results indicating that it was the ESL group that was primarily helped by adult education in attaining additional employment.

Exhibit 4.9
Remaining Employed:
"Did What You Learn in the Program Help You Get That Second Job?"

Client Response	ABE	ASE	ESL	Total
Yes	25%	30%	70%	41%
No	75%	70%	30%	59%
Sample Size	*N* = 35	*N* = 61	*N* = 45	*N* = 141

Other clients who remained employed changed to another job after leaving adult education. These clients were asked if what they had learned in adult education had helped them to get a better job than the one they had before enrolling in the program. The data in exhibit 4.10 once again indicate that it is primarily the ESL clients who had been helped to obtain a better job. Most of the ASE students who reported changing jobs indicated that the program had not helped them get a better job. The program was as likely as not to have helped ABE students to improve their job situation.

Exhibit 4.10
Remaining Employed:
"Did What You Learn in the Program Help You Get a Better Job?"

Client Response	ABE	ASE	ESL	Total
Yes	53%	44%	80%	59%
No	47%	56%	20%	41%
Sample Size	*N* = 106	*N* = 206	*N* = 179	*N* = 491

Clients Who Were Still Not Working (Cell C). Eighteen percent of those in the labor force at intake who were unemployed remained out of work at follow-up. Some of these clients had, however, worked at some time during the 6-month period following their program participation. These clients were asked in the follow-up interview whether what they had learned in the program had helped them get a job. For most of the clients in this small sample, the answer was "no." Exhibit 4.11 displays the results.

Exhibit 4.11
Remaining Unemployed:
"Did What You Learn in the Program Help You Get a Job?"

Client Response	ABE	ASE	ESL	Total
Yes	48%	20%	0%	28%
No	52%	80%	100%	72%
Sample Size	*N* = 26	*N* = 34	*N* = 8	*N* = 68

Clients Who Ceased to Be Employed (Cell A). Thirteen percent of those in the labor force at intake who were employed were not working after leaving the program. Some of these clients had worked at some time after leaving the program. These clients were asked if what they had learned in the program had helped them with respect to their post-program employment situation. Overall, this group was about as likely as not to have benefitted from adult education with respect to their employability after leaving the program. That is, the proportional distribution in the dichotomous response option observed for the total sample in exhibit 4.12 (i.e., 56 percent Yes versus 44 percent No) is not statistically different from what would be expected by chance (which is 50:50), given the sample size (*N* = 219). This is also true of the ABE group. Whereas most of the ASE group who had become unemployed indicated that what they had learned in the program had not helped their employment situation, this was not the case for ESL clients. Although they had become unemployed after the program, the vast majority of these ESL clients claimed that participation in adult education had enhanced their employability.

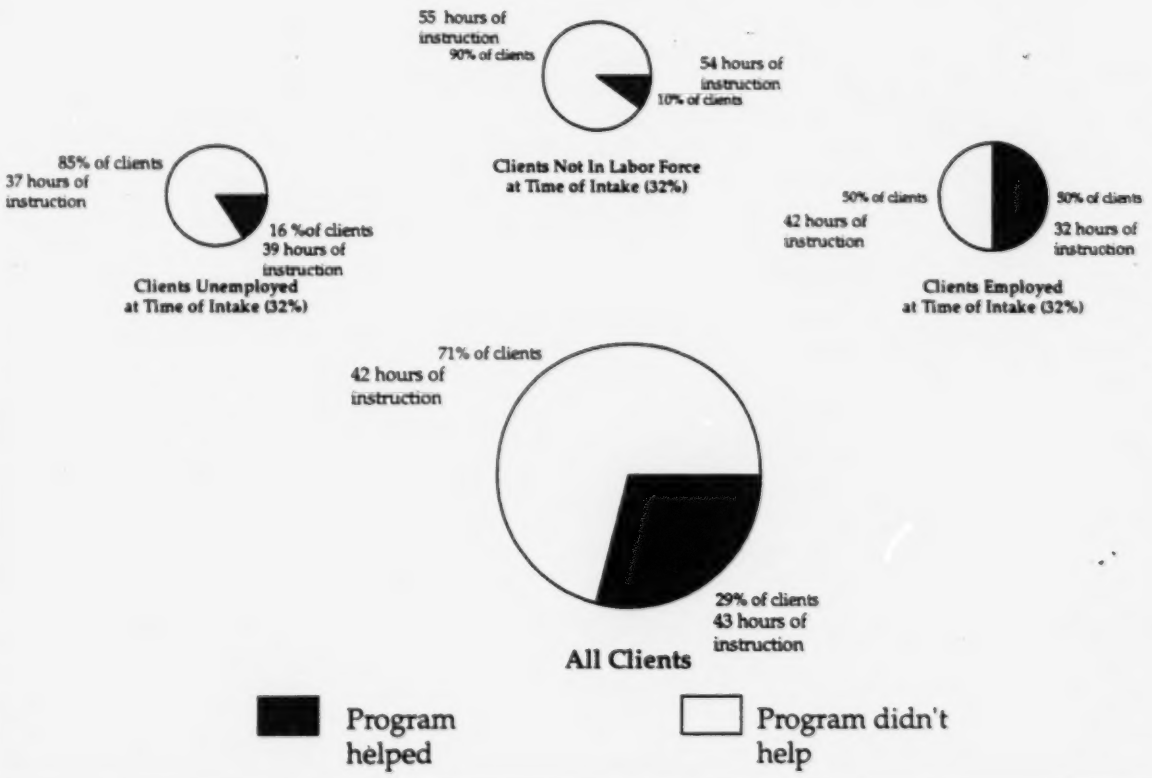
Exhibit 4.12
Becoming Unemployed:
"Did What You Learn in the Program Help You with a Job?"

Client Response	ABE	ASE	ESL	Total
Yes	45%	36%	82%	56%
No	55%	64%	18%	44%
Sample Size	*N* = 58	*N* = 78	*N* = 83	*N* = 219

In concluding the discussion of employment-related benefits, we examine the extent to which employability was enhanced for aggregates of clients who were employed at the follow-up point and who indicated that the program had helped their employment situation. That is, considering those clients who gave affirmative responses to those issues covered by exhibits 4.7 through 4.10, the question being asked is "How many clients attributed an improvement in their employment status to

what they learned in adult education?" The pie charts in exhibit 4.13 answer this question from the standpoint of the clients' labor force status at the time of enrollment.

Exhibit 4.13
Proportion of Clients Reporting That What They Learned Helped Their Employment Situation and the Median Hours of Instruction They Received


55 hours of instruction
90% of clients
54 hours of instruction
10% of clients
Clients Not In Labor Force at Time of Intake (32%)
85% of clients
37 hours of instruction
16 %of clients
39 hours of instruction
Clients Unemployed at Time of Intake (32%)
50% of clients
42 hours of instruction
50% of clients
32 hours of instruction
Clients Employed at Time of Intake (32%)
71% of clients
42 hours of instruction
29% of clients
43 hours of instruction
All Clients
Program helped
Program didn't help

The trend in the pie chart data is that employment-related benefits are directly proportional to one's initial orientation to the labor market. That is, employability was most often enhanced for those who were employed when they enrolled in adult education. At the other extreme, employability was enhanced the least for those not in the labor force at intake. Altogether, approximately 29 percent of the clients in the follow-up sample claimed that participation in adult education had improved their employment situation (see also exhibit 4.22 at the end of the chapter).

Continuing Education and Secondary School Completion

Another legislative purpose of the Adult Education Act is to "enable adults who so desire to continue their education to at least the level of completion of secondary school." Depending on the criteria used, an estimated 11 to 30 percent of the ASE participants had completed their secondary school education within 6 months after leaving the program. Of ASE clients who began instruction without a high school diploma, 11 percent were enrolled in post-secondary education and an additional 19 percent had plans to do so within the next year (this constitutes 28 percent of all ASE clients or 12 percent of clients overall).

Continuing Education. To assess the extent to which the continuing education purpose of the Act was being accomplished, we asked former clients whether they were "attending any educational class or training program now," and if so, what kind. As can be inferred from the far right column in exhibit 4.14, approximately 17 percent of the clients were continuing their education 6 months after having left the federal Adult Education Program: about 5 percent were in a high school level program, 7 percent in postsecondary, and 5 percent in English language skills. ESL students were primarily pursuing further English language instruction; about half of the ABE students were enrolled in GED preparation courses; and most of the former ASE students who were continuing their education were enrolled in community or regular college classes or in vocational or job training programs.

We also asked whether the former clients planned to enroll in any educational or training classes in the future. Those who said they had such plans (72 percent) were asked when and what kind of class or training program they expected to take. Exhibit 4.15 indicates that almost half of the former clients (46 percent) intended to continue their education in some fashion during the present year whereas 26 percent planned to pursue further education the following year.

Exhibit 4.14
Current Continuing Educational Status of Clients Without A High School Diploma or the Equivalent When They Enrolled
(*N* = 3,114)

Status of Clients 6 Months After Leaving Adult Education	Percent of Clients Without a High School Diploma			
	ESL	ABE	ASE	Overall
Enrolled in GED/high school program	3 %	7 %	6 %	5 %
Enrolled in community college or vocational training	4	5	11	7
Enrolled in English-language skills class	17	2	1	5
Not currently attending any educational classes or training program	76	86	82	83

Exhibit 4.15
Continuing Education Plans of Clients by Instructional Component
(*N* = 4,279)

Type of Class or Program in Which Clients Plan to Enroll "Before Next Year"	Percentage of All Clients			
	ESL	ABE	ASE	Overall
GED/high school program	6 %	22 %	17 %	14 %
Community college/vocational training	17	17	25	20
English language skills class	22	4	3	10
Some other class	1	3	2	2
Total of all with plans for next year	46	46	47	46
None, but plan to enroll "next year"	31	23	24	26
None, either had no plans or plans are more than a year away	23	31	29	27

Completion of Secondary Education. The study did not include a direct measure of whether the program helped clients obtain the equivalent of a secondary school diploma or to continue their pursuit of that goal. It does, however, provide the basis for three relatively conservative estimates of the extent to which clients accomplished this purpose of the Act.

The first estimate is based on former ASE clients who did not have a high school diploma when they enrolled and who indicated in the follow-up survey that

they were currently enrolled in post-secondary education. This represents 11 percent of ASE clients (see exhibit 4.16). As the exhibit also shows, some ABE and ESL clients who entered without a diploma also indicated that they were enrolled in post-secondary level training, and an additional 6 percent of ASE clients indicated they were currently enrolled in a high school/GED preparation program, and thus were continuing their education in a manner consistent with the purposes of the Act.

Exhibit 4.16
Estimates of All Clients Who Were Helped to Continue Their Education at Least To the Level of Secondary School Completion
(*N* = 437)

Client Characteristics	Percent of Clients			
	ESL	ABE	ASE	Overall
Had no diploma, currently enrolled in high school/GED	3 %	7 %	6 %	5 %
Had no diploma, currently enrolled in community college/vocational training	4	5	11	7
Total enabled to continue	7 %	12 %	17 %	12 %

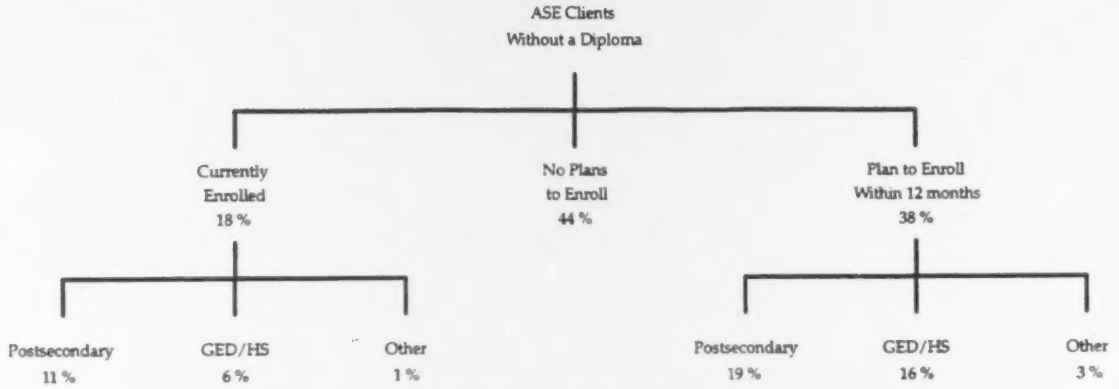
The second estimate is based on former ASE clients who did not have a high school diploma when they enrolled and who indicated on the follow-up survey that they were currently enrolled in post-secondary education or had plans to do so within the coming year. This represents 30 percent of ASE clients. As exhibit 4.17 shows, 11 percent reported that they were currently enrolled in post-secondary courses and 19 percent indicated that they had plans to enroll in such courses during the coming year. It should also be noted that an additional 6 percent were currently enrolled in a high school/GED program and another 16 percent indicated that they had plans to enroll in a secondary school level course at sometime during the next 12 months.

The third estimate is based on former ASE clients who reported that they had completed their adult education program and who are projected to have passed the GED test. In the telephone follow-up survey, some 39 percent of the ASE clients reported that they left adult education because they had completed the program. Assuming these clients took the GED test and that their success rate was the same as the average of all those taking the test (70 percent),[26] approximately 27 percent of

[26] According to the GED Testing Service, about 71 percent of all those who completed the full GED test battery during 1993 successfully passed the test.

the ASE participants may be assumed to have passed the GED, thereby signifying completion of secondary education. The estimate of projected GED passers is approximately 10 percent of the total number of clients served by the federal Adult Education Program.

EXHIBIT 4.17
Continuing Education of ASE Clients Without a High School Degree When They Enrolled
(N=1,706)



Note: Percents are of ABE/ASE clients who did not have a high school degree or equivalency when they enrolled in the program.

Accomplishment of Other Client Goals

Adult learners typically entered adult education with multiple motives. In addition to goals related to improving basic skills and enhancing employability, many clients have personal goals related to improving their self-image. For parents in particular, encouraging their children's reading ability is a related aspiration.

Enhancing Self-Image. In the telephone follow-up survey, we asked clients who had indicated that they sought to "feel better about myself," "contribute better to family and community," "help my children with schoolwork," "become less dependent on others for help," or "make others feel better about me" the extent to which the program had helped them reach these goals ("a lot", "somewhat" or "not at all"). A summary of their responses is presented in exhibit 4.18.

Exhibit 4.18
Proportion of Clients Reporting That the Program Had Helped "a Lot" As Related to Different Reasons for Enrolling in Adult Education (*N* = 4,653)

Reason for Enrolling	Percent of Clients			
	ESL	ABE	ASE	Total
Feel better about myself	62 %	68 %	66 %	65 %
Make others feel better about me	49	50	50	50
Contribute to my family and community	50	46	40	46
Be less dependent on others for help	47	44	44	45
Help my children with their schoolwork	31	38	33	33
Total helped in one area or more	70 %	70 %	68 %	70 %

On the whole, most clients reported that the program helped "a lot" with achieving one or more of these self-image goals. Overall, 65 percent of those wanting to feel better about themselves believed that the program helped "a lot." Some 50 percent of those wanting others to feel better about them reported that the program had helped "a lot" toward achieving this goal, as did 46 percent of those wanting to contribute to family and community, and 45 percent of those wanting to be less dependent on others. Thirty-three percent of those wanting to help their children with schoolwork believed that the program had helped "a lot" toward attaining this goal. Overall, 70 percent of the clients reported that they had been helped "a lot" in achieving personal goals related to the enhancement of self-concept.

Reading to Young Children. A program outcome of interest to many adult educators is the extent to which participation in adult education programs spills over to benefit other members of a participant's household. Particularly interesting in this regard, and an explicit purpose of the National Literacy Act (Part B/Title III, Even Start Family Literacy Programs), is the effect on young children in the household of the adult education student. One of the best predictors of a child's academic success is being read to and having access to books in the home.

To assess whether the program resulted in an increase in the frequency of reading to children, clients were asked at intake if there were children under the age of 6 in the home and, if so, how often the client read to or with them ("almost never," "about once or twice a week," "about once a week," or "nearly every day"). This

question was asked again in the telephone follow-up. The results are presented in exhibit 4.19.

Exhibit 4.19
Proportion of Clients Reporting Changes in How Often They Read to or with Their Children Between Intake and Telephone Follow-up
(*N* = 1,290)

Change in Reading Frequency between Intake and Follow-up	Percent of Clients			
	ABE	ASE	ESL	Overall
More often	38 %	32 %	27 %	32 %
The same	50	56	46	51
Less often	12	12	27	17
Net increase	26 %	20 %	0 %	15 %

Overall, 32 percent reported reading to, or with, young children more often at follow-up than at intake while 17 percent reported reading to, or with, these children less often at follow-up than at intake, for a net increase of 15 percent in the number of clients reading more frequently with young children. The net increase of 15 percent reflects changes in the ABE and ASE populations but not, surprisingly, overall changes in the ESL clients. ABE and ASE clients increased their reading involvement with young children on the average from weekly to daily. The overall lack of change in the ESL group reflects an average pattern of continued weekly involvement in reading with young children. The change among the ABE clients is particularly encouraging in that the proportion of clients who reported that they "almost never" read with their young children declined from approximately 19 percent at intake to about 8 percent at follow-up.

Clients' Reasons for Terminating Service

Because many clients leave abruptly, local program staff could not provide a reason for client termination in 70 percent of the cases. However, as part of the telephone follow-up survey, we directly asked the clients why they left adult education. Responses to these open-ended questions were content-analyzed, coded into categories, and summarized in exhibit 4.20. Subcategories total to more than 100 percent because some clients gave more than one reason; the five main categories add to 100 percent.

Exhibit 4.20
Reasons Clients Left the Program
(*N* = 4,653)

Reason for Leaving	Percent of Clients			
	ESL	ABE	ASE	Overall
Left satisfied	**29 %**	**41 %**	**54 %**	**41 %**
Completed program	22	29	39	30
Completed required attendance	1	2	3	2
Got what went for/achieved goals	2	4	6	4
Other (e.g., enrolled in school, got a job)	6	8	8	7
Outside events	**57**	**42**	**34**	**45**
Personal illness, health problems	5	5	4	5
Family responsibilities (includes child care)	14	12	9	11
Transportation problems	5	5	3	4
Change of work/job responsibilities	28	14	13	19
Other reasons not to do with course itself	9	9	7	8
Instructional factors	**6**	**9**	**6**	**7**
Personal embarrassment/discomfort	1	1	0	1
Lack of progress/dissatisfaction w program	1	2	2	2
Took too much time and energy (e.g., too far)	3	4	4	4
Other reasons reflective of the program	4	4	5	4
Combination of above categories	**6**	**4**	**4**	**4**
No reason given (can't say, just left)	**2**	**4**	**2**	**3**
Total	**100 %**	**100 %**	**100 %**	**100 %**

A plurality of clients (45 percent) indicated that they left adult education for reasons external to the program. Such nonprogram-related reasons for leaving adult education are particularly characteristic of ESL and ABE clients. Most often, ESL and ABE clients cited employment-related or family-related reasons for leaving adult education. Overall, only 7 percent of the clients left adult education for instructional reasons which suggest that they were dissatisfied in some way with the program.

ASE clients most often left adult education because they had completed their course of study. Altogether, 41 percent of the clients indicated they had left the

program satisfied, most frequently because of program completion. Because many clients appear to behave in terms of the traditional school year, "completing the program" may simply indicate that the semester had ended.

To assess the relationship between attendance and reasons for leaving the program, we looked at the number of hours attended from intake to departure and the number of weeks enrolled. Exhibit 4.21 shows the median number of hours and the median number of weeks attended for clients in each reason-for-leaving category. From the standpoint of total (median) hours of instruction, the data in exhibit 4.21 indicate that clients in each instructional component who were satisfied with their program of instruction attended adult education classes longer than clients who left the program for reasons other than being satisfied. On the other hand, clients who were dissatisfied with their program of instruction stayed in adult education the least amount of time.

Exhibit 4.21
Reasons for Leaving Associated with Two Measures of Attendance
By Instructional Component
(*N* = 4,653)

Measures of Attendance by Component		Reason Client Left Program			
		Satisfied	Outside Events	Because of Problems with Instruction	Other Reasons
ESL	Median hours	83	51	35	41
	Median weeks	13	9	8	9
ABE	Median hours	45	27	24	34
	Median weeks	12	10	7	8
ASE	Median hours	38	23	20	20
	Median weeks	10	7	6	5

Overall Benefits Relative to the Purposes of the Act

Based on the preceding analyses of client outcomes related to basic education skills, employment, and continuing education, we provide estimates in exhibit 4.22 of the aggregate proportion of former clients who indicated that they benefitted from participation in adult education with respect to the three purposes of the Adult Education Act. The summary data in the top half of the exhibit, pertaining to each of the three purposes of the legislation, show that the federal Adult Education Program benefits clients primarily in the area of improving basic education skills. Indeed, as

indicated by the bottom half of the exhibit, most clients benefit from adult education primarily in one of the three areas specified by the legislation, and for most this is in the area of basic education skills. While a quarter of all participants did benefit from program participation with respect to at least two of the purposes specified by the legislation (most often improvements in basic education skills and employability), it was rare for clients to benefit in all three areas targeted by the Adult Education Act.

Exhibit 4.22
Proportion of Clients Benefitting in One or More of the Ways Identified in the Legislation
(*N* = 4,653)

Legislation Purpose	Percent of Clients Benefitting			
	ESL	ABE	ASE	Overall
Basic education skills	60 %	61 %	53 %	58 %
Employment	35	23	24	29
Continuing education	4	5	11	7
Benefitted in at least one purpose of Act	75	71	66	70
Benefitted in at least two purposes of Act	27	25	23	25
Benefitted in all three purposes of Act	1	1	1	1

In exhibit 4.23, clients in the telephone survey who benefitted from program participation in at least one of the three areas specified in the legislation are compared with clients who did not achieve any benefits from participating in adult education; the comparison is based on median hours of instruction and median weeks of enrollment. For all three instructional components, the data show that the amount of instruction is greater for clients who benefitted from program participation compared to their counterparts who did not achieve benefits from participation. However, one can not tell from these data whether clients benefitted from participation because they received a greater amount of instruction or whether those who benefitted simply elected to continue their participation longer for whatever reason. In addition, the reader should keep in mind that the telephone survey data tend to underestimate the number of hours of instruction clients received in adult education.

Exhibit 4.23
Relationship of Amount of Instruction
To Reported Benefits of Participating in Adult Education
(*N* = 4,653)

Composite Measure of One or More Benefits: Basic Skills, Employment, Continuing Education.	Median Hours of Instruction		Median Weeks of Instruction	
	Benefitted	No Benefit	Benefitted	No Benefit
ESL Component	60	48	10	9
ABE Component	45	20	12	6
ASE Component	36	20	10	6
Overall	48	27	10	7

Summary and Conclusion

This chapter has presented findings based largely on client perceptions as derived from the telephone follow-up survey with respect to the three central purposes of the Adult Education Act: the acquisition of basic education skills; enhanced employability; and enabling clients to continue their education to at least the completion of secondary school.

A principal finding in the area of basic education skills was the perception of a majority of clients that they had been helped to improve "a lot" in at least one area of basic skills. A related finding from the telephone survey was that clients who perceived themselves as having benefitted from adult education in the area of basic skills tended to have had a greater amount of instruction compared to clients who perceived themselves as not having benefitted from basic skills education. We also reported that advances in instructional placement level were greatest for beginning students.

There was a net increase of almost 10 percent in employment following participation in adult education. ESL clients reported having benefitted the most in this respect. Compared to ABE and ASE clients, a significantly greater percentage of former ESL clients reported having benefitted from adult education with respect to becoming employed or finding additional employment after leaving adult education. For clients who were employed both prior to enrollment and subsequent to leaving adult education, a significantly greater proportion of ESL clients compared to ABE or ASE clients reported that participation in adult education had helped to improve their job performance or had helped them to acquire a better job than they had prior to enrolling in adult education.

The telephone survey results indicated that approximately 17 percent of the former adult education clients are continuing their education, with 7 percent of the program's participants now enrolled in post-secondary education. We estimated that between 11 and 28 percent of the program's ASE clients (or, 4 to 12 percent of all clients served) were helped by adult education to complete their secondary education.

In addition to goals related to employment and basic skills, most adult education clients also entered the program with personal goals related to the enhancement of self-esteem or self-concept. The telephone survey data suggest that adult education was successful in helping approximately 70 percent of the program's participants who had such personal goals to improve their self-concept. The telephone survey data also indicated a net increase of 15 percent in the number of former clients who read more frequently to young children in their household than they did prior to enrollment in adult education.

While 41 percent of the participants left adult education after having completed their program of study in one fashion or another, a plurality of clients (45 percent) left for reasons external to the program. More specifically, ASE clients were most likely to have left adult education because of program completion whereas ABE and ESL clients were most likely to have left the program because of employment and family-related responsibilities. Approximately 7 percent of the clients terminated instruction because of dissatisfaction with their adult education program.

Approximately 70 percent of the clients are estimated to have benefitted from participation in adult education with respect to the purposes of the Adult Education Act. The majority of clients (58 percent overall) perceive these benefits to be in the area of improving basic education skills.

Chapter 5
PROGRAM RESULTS

The central purpose of the National Evaluation of Adult Education Programs was to assess the potential of programs supported by the Adult Education Act "for significantly reducing deficits in the adult population with respect to literacy, English proficiency, and secondary education." In previous chapters of this report we have shown that:

- The program serves approximately 1.7 million new clients every year.
- Clients that began instruction receive a median of about 58 hours.
  - → 35 hours for ABE.
  - → 28 hours for ASE.
  - → 113 hours for ESL.
- Most of the clients represented by our telephone follow-up survey report that they benefitted from their participation in some meaningful way; some objective indicators of client level outcomes tend to support the client's self-reports.

In this chapter we relate estimates of the size of the program's target population to information on client enrollment and participation. As these analyses show, the program serves substantially more ESL clients per 1,000 members of the target population than members of the other two subgroups (i.e., ABE or ASE). They also show that, depending on the time of year, between 16 and 25 percent of programs report that they have waiting lists of clients they are unable to serve, with most of the clients on these lists waiting to begin instruction in ESL. Finally, the analyses show that the program's target population increases by more than twice as many persons each year as the program is successfully able to serve.

Target Population Estimates

Target population estimates for Adult Education Programs were completed by Research Triangle Institute using data from the 1990 Census of Population and Housing (CPH) [Thorn and Fleenor 1993].[27] The 1990 census has the most appropriate data for making these estimates because these data are the only national

[27] RTI used the Public Use Microdata Samples (PUMS) data base, which contains 1990 census information on educational attainment and English proficiency for a 5 percent sample of the households in the country, with sampling weights used to produce estimates for the total United States population.

data available that match the service areas of the adult education programs. The target population is defined as persons 16 years old and older who have not completed secondary school, have not received a GED, and are not currently enrolled in school. About one-fourth (27 percent) of the total adult population in the United States falls into this category.

RTI developed national, regional, and state profiles of the target population, providing estimates by educational attainment, proficiency in English, age, race/ethnicity, and other characteristics. In summary, their findings are as follows:

- Some 39 percent of the target population are located in the South, 22 percent in the North Central region, 20 percent in the Northeast, and 19 percent in the West.

- A large proportion of the target population (60 percent) have completed 9 to 12 years of school; the remaining 40 percent have less than a 9th grade education.

- Within the target population, 23 percent speak English as a second language.

- Approximately 41 percent of the target population are 60 years of age or older, 28 percent 25 to 44, 20 percent 45 to 59, and 11 percent 16 to 24.

- Estimates by racial/ethnic groups indicate that 67 percent of the target population are white, 16 percent black, 13 percent Hispanic, 2 percent Asian/Pacific Islander, and less than 2 percent American Indian/Alaskan Native.

Target population estimates by region and educational group are presented in exhibit 5.1. As noted, these estimates exclude all adults who have attained a high school diploma or the equivalent. The Adult Education Act, however, permits serving these adults if they meet other criteria of need. Adults whose first language is not English and who do not speak English very well account for more than 45 percent of adult education program clients; about half of these ESL clients have attained at least a high school diploma. Therefore the estimates presented here underrepresent the number of ESL adults who are eligible for adult education programs, and the ASE estimate of the target population does not include adults who are native English speakers with a high school diploma but low reading skills.

The data show that the largest target population is the adult secondary education population--adults who have completed 9 to 12 years of school but have not received a diploma or its equivalent. This is true for the United States as a whole and for three of the four regions. In the West, the ESL target population is the

largest, but about the same size as the ASE target population for that region (9 percent of the total target population compared with 8 percent).

Exhibit 5.1
Estimates of Target Population by Region and Instructional Component

Region	Adult Education Target Population			
	ESL	ABE	ASE	Total
USA	10,179,379	11,545,723	22,341,013	44,066,115
North Central	1,147,486	2,883,504	5,515,358	9,546,348
Northeast	2,523,607	1,910,890	4,303,534	8,738,031
South	2,672,517	5,618,931	9,145,264	17,436,712
West	3,835,769	1,132,398	3,376,857	8,345,024

Note: The target population estimates exclude all adults age 16 and older who have a high school diploma or the equivalent or who are enrolled in school. The Adult Education Act permits serving these adults if they meet the criteria of need.

To more accurately reflect the target population, we included ESL adults with a diploma in our calculations who reported that they speak English less than "very well." This has the effect of increasing the number of ESL adults in the target population from 10,179,379 (23 percent of the total) to 12,322,835 (27 percent of the total). Thus the total target population increases from about 44.1 million to 46.1 million adults. Exhibit 5.2 compares the ESL target population estimates with and without a high school diploma or the equivalent.

Exhibit 5.2
Estimates of Target ESL Population by Region

Region	Target ESL Population*		
	ESL without a Diploma	ESL with a Diploma	Total ESL
USA	10,179,379	2,143,456	12,322,835
North Central	1,147,486	244,547	1,392,033
Northeast	2,523,607	624,317	3,147,924
South	2,672,517	543,884	3,216,401
West	3,835,769	730,708	4,566,477

* ESL refers to those adults who speak English as a second language and who indicated in the 1990 Census that they do not speak English "very well."

The addition of adult ESL speakers with a diploma to the total target population changes the proportion of ABE eligibles in the target population from 26 percent to 25 percent and reduces the proportion of ASE eligibles from 51 percent to 48 percent. Their relative positions do not change, however; the total ASE target population is still the largest and the ABE target population is still comparable to the ESL population.

Rates of Participation

To calculate participation rates, we used client intake records obtained from our national sample of 22,548 clients who enrolled in adult education programs between April 1991 and April 1992. Exhibit 5.3 presents by region and instructional component the number of active clients who had no high school diploma or the equivalent (a subset of all newly enrolled ABE and ASE clients) plus the total number of clients in ESL. As the exhibit shows, the number of clients is much larger within the ESL component than it is within ABE or ASE components. Also, the numbers of new clients vary by region, with the largest concentration of new clients in the West, followed by the South, the North Central region, and the Northeast. The new ESL clients are heavily concentrated in the western states, while ABE and ASE new clients are heavily located in the South.

Exhibit 5.3
Number of New ABE and ASE Clients Without High School Diploma or the Equivalent, and the Number of New ESL Clients By Region and Instructional Component

Region	Number of Clients			
	ESL	ABE	ASE	Total
USA	823,300	274,200	387,100	1,484,600
North Central	69,500	79,200	102,600	251,300
Northeast	41,200	37,500	51,900	130,600
South	98,700	139,000	162,700	400,400
West	613,900	18,500	69,900	702,300

Note: New-client estimates exclude ABE and ASE clients with a high school diploma or the equivalent.

Rates of Participation by Region and Instructional Component. Using target population estimates that include all ESL adults who do not speak English very well and the number of active first year clients, we calculated the United States and regional participation rates overall and for each instructional component.[28] Exhibit 5.4 presents this information.

The rate of participation is the number of new clients for every 1,000 eligible persons. For example, the total new-client rate for the United States is 32, meaning that for every 1,000 persons who are eligible for adult education in the United States, 32 enroll and receive at least 1 hour of instruction as new clients in adult education programs in a given year. In general, the exhibit shows the highest rates of new clients in the ESL component and the lowest in the ASE component. Regionally, rates of participation are highest in the West and lowest in the Northeast. New-client rates across the United States range from a low of 12 persons for every 1,000 eligible for ASE in the Northeast to a high of 134 for ESL in the western United States.

About 75 percent of the ESL target population in the United States is located in the West, and about 87 percent of the West's target population is eligible for ESL (see exhibit 5.3). This compares to the data reported in chapter 2 indicating that some 82 percent of the clients in the West are enrolled in ESL and that the western region accounts for about 72 percent of all ESL clients enrolled in the program. For ABE, on the other hand, the participation rate in the West is considerably less than elsewhere, and ABE clients are only about 4 percent of the clients enrolled in that region.

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[28] RTI target population estimates for ABE and ASE populations included persons eligible for ESL. Our calculations treat the ESL population separately.

Exhibit 5.4
Participation Rates in Adult Education by Region and Instructional Component

Region	Rates of Participation			
	ESL	ABE	ASE	Total
USA	66	23	17	32
North Central	49	27	18	25
Northeast	13	19	12	13
South	30	24	17	22
West	134	16	20	77

The data also show that the proportion of the ESL target population being served is substantially greater in the West than in other regions, and that ABE clients in the West are underserved in comparison with the rest of the United States. As exhibit 5.5 shows, a member of the ESL target population in the West is some eight times as likely to be served by the program as an adult in the ABE target group.

Exhibit 5.5
Ratios of Target Population Participation Rates by Region

Region	Ratios of Participation Rates*		
	ESL/ABE	ESL/ASE	ABE/ASE
North Central	1.8	2.7	1.4
Northeast	0.7	1.1	1.5
South	1.3	1.8	1.6
West	8.4	6.7	1.4
U.S. Total	2.9	3.9	1.4

*Participation rate = Number of new clients served over 1 year period per 1,000 in the target population. See exhibit 5.4 for actual rates.

In the remainder of this section we present rates of participation by age and by race/ethnicity for the United States and the four census regions. Because data on the number of ESL clients with diplomas by age or by race/ethnicity were not available, the participation rates we report in exhibits 5.6 and 5.7 are based on a smaller target population number (i.e., 44 million rather than 46 million). In order to compare equivalent populations, we excluded ESL adults with a diploma or the equivalent from our new-client enrollment data for these analyses. Because the proportion of new ESL clients with a diploma is larger than the proportion of ESL with a diploma in the target population, participation rates presented by age and racial/ethnic groups are lower than they would be if these ESL adults were included.

Rates of Participation by Age. The target population estimates reported by RTI indicate a difference in eligibility by age. More than 40 percent of the adults eligible for adult education program services are at least 60 years old. Adults in this age group have the lowest educational attainment; 53 percent have less than a 9th-grade education. In contrast, adults 16-24 years of age constitute only 11 percent of the total target population, and 20 percent of them have less than a 9th-grade education. Client enrollment data indicate that the average age of new clients is 31 years. Some 3 percent of clients are 60 years of age or more, and 43 percent are younger than 25. Only 9 percent of new clients are over 45 years of age.

We calculated participation rates for each age group (16-24, 25-44, 45-59, 60 and over).[29] These data are presented in exhibit 5.6. The highest participation rates are among the youngest age group, 16-24. Participation rates steadily decrease as the age of the target population increases, with rates among the people age 60 and older being very low. From these data we can conclude that the older target population is not being proportionately served.

As exhibit 5.6 shows, participation rates are highest in the West across all age groups. These data are not surprising because the western states, which include California and Texas, have a large population of nonnative speakers of English. As noted, almost half of all program clients speak English as a second language.

[29] We use these age categories, rather than those found elsewhere in the report, to correspond with the available census data categories.

Exhibit 5.6
Rates of Participation in Adult Education,
By Region and by Age Group

Region	Rates of Participation			
	16-24	25-44	45-59	60 +
USA	83	30	7	1
North Central	101	34	7	1
Northeast	57	22	4	<1
South	59	17	4	1
West	122	54	7	5

Note: Rates of participation among 1,000 eligible persons for adult education programs in 1990, excluding all adults age 26 and older who have a high school diploma or the equivalent or who are enrolled in school.

Rates of Participation by Racial/Ethnic Group. Because different racial or ethnic groups may have different rates of new-client enrollment, we calculated the rate of new-client enrollment across five groups (American Indians/Alaskan Natives; Asians/Pacific Islanders; non-Hispanics blacks, Hispanics; and non-Hispanic whites).[30] As exhibit 5.7 shows, Asian/Pacific Islander adults are the most likely to participate in adult education programs, followed by Hispanic adults. There is regional variation, with Asians or Pacific Islanders more likely to participate in the North Central region, Hispanics more likely to participate in the South, and American Indians/Alaskan Natives more likely to participate in the Northeast or West. Overall, non-Hispanic whites are proportionately the least likely to participate in adult education programs.

[30] RTI target population estimates by race/ethnicity have five Hispanic and five non-Hispanic categories. Our client enrollment data have only the five categories of race/ethnicity just listed. For comparative purposes, we combined all RTI Hispanic categories into one group. One RTI category, "other, non-Hispanic" had to be omitted from our calculations of participation rates because our client enrollment data have no equivalent group.

Exhibit 5.7
Rates of Participation, by Region and by Racial/Ethnic Group

Region	Racial/Ethnic Group				
	American Indian or Alaskan Native	Asian or Pacific Islander	Black, not Hispanic	Hispanic	White, not Hispanic
USA	52	64	16	55	13
North Central	47	177	17	66	18
Northeast	71	12	14	31	10
South	8	23	16	14	13
West	80	76	16	76	11

Note: Rates of participation among 1,000 eligible persons for adult education programs in 1990, excluding all adults age 16 and older who have a high school diploma or the equivalent or who are enrolled in school.

Current Capacity to Enroll Additional Clients

Another study objective was to explore the relationship between the demand for program services and the capacity of adult education programs to meet that demand. One of the measures we considered was the proportion of programs with clients on waiting lists. Programs in our survey of all local providers (Universe Survey; items 20, 22) were asked to report the number of clients on waiting lists at the end of June 1990 and at mid-October 1990. From these responses, we found that 16 percent of programs reported having clients on waiting lists at the end of June 1990, and 25 percent of the programs had clients on their waiting lists in mid-October 1990. These programs with waiting lists may be considered to have demand for adult education services in excess of their capacity to provide services.

Using this same information, we also compared the aggregate and the mean number of clients on waiting lists within the three instructional components (ESL, ABE, ASE). As shown in exhibit 5.8, our data indicate that the average number of ESL clients on waiting lists at the end of June 1990 or the middle of October 1990 was larger than the average number of ABE or ASE clients for the same two periods. It appears that ESL components are more likely to have an unmet demand for services than either ABE or ASE components.

Exhibit 5.8
Number of Clients on Waiting List, by Instructional Component
(*N* = 112)

	Total Number of Clients on Waiting Lists			Mean for Programs with Waiting Lists		
	ESL	ABE	ASE	ESL	ABE	ASE
June 1990	44,800	16,500	8,100	313	61	51
Mid-October 1990	40,800	13,200	9,600	86	53	30

As part of our analysis of demand and capacity, we also examined program responses to an item on the survey of all providers (Universe Survey, item 23) which asked program directors to provide the number of additional clients, by component, whom they could have accommodated if more people had shown up for instruction. Programs reporting that one or more additional clients could be served were considered to be operating below capacity; approximately 59 percent of all programs fit this definition of having capacity to spare.

We also compared the mean number of additional clients who could be served within each of the three instructional components. Most programs reported that they could serve fewer additional ESL clients (33 on average) than ABE clients (44) or ASE clients (47). These results suggest that ESL components are less likely to be operating below capacity than ABE or ASE components.

Exhibit 5.9 provides estimates for mid-October 1990 of the number of clients on waiting lists, the number of additional clients the program directors with waiting lists said they could currently be serving if the clients had shown up at the right time, the number of additional clients who could have been served by programs with or without waiting lists, and the number of clients they said were currently enrolled. As may be seen from the exhibit:

- Across all programs, the number of additional clients that directors say their programs could be serving is about 10 times greater than the number on waiting lists.

- Overall, the number of clients waiting to be served is about the same as the amount of the reported excess capacity in programs with waiting lists. However, within components, there are more ESL clients waiting to be served than there is excess capacity in programs with waiting lists. The opposite is true for ABE and ASE.

- Programs report that they could be serving almost half again (42 percent) more clients than they currently enroll.

While these data clearly indicate that the system has the capacity to serve additional clients, the extent to which accessing that capacity is dependent on additional funding is not clear. Responses from some program directors to the question about their ability to serve additional clients suggest that their estimates assumed some additional resources would be forthcoming.

Exhibit 5.9
Number of Clients on Waiting Lists and the Number That Programs Could Have Served and Were Serving

Number of Clients as of Mid-October 1990	ESL	ABE	ASE	Total
On waiting lists	40,800	13,200	9,600	63,600
Others who could have been served by programs with waiting lists	28,000	21,500	12,300	61,800
Others who could have served by all programs (with or without waiting lists)	141,700	361,600	138,400	641,700
Total reported as being served	537,200	454,000	533,500	1,524,700

To explore this topic further, we also asked the programs responding to the Program Profile (item 4) to report the maximum number of clients in each program component who could be served at any one time. Because a number of factors--assumptions about funding availability, qualified staff, and instructional space--can influence estimates of program capacity, responses to maximum enrollment items may reflect assumptions about future or possible capacity rather than current reality. For example, several programs reported that there was no maximum to their enrollments and that they could be expanded to meet local adult education needs.

To determine which programs were operating below, at, or above capacity, we computed the ratio of current enrollment figures reported for mid-October 1990 (item 3) to the maximum enrollment reported for each program. Levels of program capacity are defined as follows: a program is operating below capacity if the ratio of current to maximum enrollment is between 0 and 0.63. A program is operating at capacity if the ratio of current to maximum enrollment is between 0.64 and 1.5.[31]

[31] Programs were considered to be "at capacity" if the ratio of current to maximum enrollment was within one-half of a standard deviation from the mean.

Programs in which the ratio of current to maximum enrollment exceeds 1.5 are considered to be above capacity.

Using this definition we found the following:

- 23 percent of the programs are operating below capacity;
- 63 percent are operating at capacity; and
- 14 percent are operating above capacity.

Exhibit 5.10 presents the level of capacity within ESL, ABE, and ASE components. ABE components are the least successful at balancing program demand and capacity, and ESL components are the most successful. Approximately 43 percent of the ABE and 24 percent of the ASE components are operating below capacity, compared with only 8 percent of the ESL components. These findings correspond with data from the Universe Survey. Programs with an ESL component are least likely to have underutilized capacity.

ESL programs are also less likely than ABE and ASE programs to have seriously exceeded their capacity. Most (87 percent) of the ESL components are operating at capacity, compared with 42 percent for ABE components and 63 percent for ASE components. Relatively few programs (between 5 and 16 percent) have components that are operating substantially above this program capacity indicator.

Exhibit 5.10
Utilization of Program Capacity by Predominant Component*
(*N* = 95)

Capacity	Percent of Programs		
	ESL	ABE	ASE
Below	8 %	43 %	24 %
At	87	42	63
Above	5	16	13
Total	100 %	100 %	100 %

* Defined as the component serving the largest number of clients.

We also related this measure of utilization of program capacity to measures of program size, the urbanicity of the program's service area, the type of sponsoring agency, the amount of program emphasis on outreach and recruitment activities, and measures of average class size and hours of instruction. In brief we found:

- **Little relationship between operating at capacity and program size, defined as the number of clients served.** Between 43 percent and 79 percent of programs of any size were operating at capacity. The largest programs (1,000 or more clients served) were somewhat more likely to be operating at capacity, and the very largest (5,000 clients or more) were the most likely to have substantially exceeded the capacity of their program (26 percent of these very large programs).

- **Few programs in metropolitan areas (11 percent) operating below capacity.** There were no programs in large cities in major metropolitan areas operating below capacity. However, in nonmetropolitan areas, 42 percent of programs indicated they were operating below capacity.[32]

- **Programs operated by community colleges most likely to be operating below capacity.** This was the case for some 59 percent of community colleges, 28 percent of programs operated by public school districts, and 19 percent of programs operated by other service providers.

- **No relationship between average class size or average hours of instruction and capacity.**

- **A relationship between outreach efforts and below-capacity operation, but not the one we expected.** We found that no programs with high outreach effort were operating above capacity and 57 percent were operating below capacity. Among programs with a low or medium level of outreach effort, more than 55 percent are operating at capacity compared with 43 percent among programs with a high level of outreach effort.[33]

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[32] Community designations are based on 1990 Census information plus responses to the Universe Survey on type of community served. Major metropolitan areas are defined as those having a population of 1.5 million or more; large cities as those having a population of 500,000 or more, and small metro areas as any community located within a standard metropolitan area with a population of less than 1.5 million.

[33] Program Profile items were used to develop a composite measure of the extent to which programs emphasize program recruitment/outreach activities. Programs were assigned an outreach effort score ranging from 0 to 10. Scores were then collapsed into low (0-1), medium (2-4), or high (5 or more).

Comparisons of Program Successes with New Additions to the Target Population

A central purpose of this study was to assess the potential of programs funded under the Adult Education Act to significantly reduce the literacy needs of the target population. In this section we compare estimates of the annual additions to the target population with estimates of the number of clients who received sufficient hours of instruction to be counted as program successes, or subtractions from the program's target population. By focusing on this comparison, we are being consistent with the data collected through this study and we avoid essentially unanswerable questions about the impact of past program activities.

It should be noted that we are not estimating *net* annual changes in the program's target population. Specifically, subtractions attributable to mortality, the efforts of adult education programs not receiving federal funding, and literacy gains achieved by wholly informal means are not considered in our analysis.[34]

Annual Additions to the ABE, ASE, and ESL Target Population. Estimating the annual addition to the program's target population involves using census data and making a number of steady-state assumptions (e.g., no dramatic changes in the patterns of school completion or the immigration of non-English speakers in the past several years). A summary of our estimates is presented in exhibit 5.11. As the exhibit shows, overall, we estimate that additions to the target population for the adult education program amount to about 1.5 million persons a year, with the annual increase being the greatest for ESL (643,000), followed by ASE (590,000) and then ABE (214,000).

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or more).

[34] Mortality is probably the largest annual subtraction from the ABE target population, since 22 percent of the 17.4 million adults with less than 9 years of education are age 75 or over. Annual mortality in this group amounts to about 8 percent, or about 312,000 deaths each year. (*March 1993 Current Population Survey Report on Educational Attainment*, in Statistical Abstract of the United States: U.S. Death Rates by Age).

Exhibit 5.11
Estimated Annual Additions to the Target Population

Instructional Component	Basis for Estimate	Number of Adults
ASE addition[a]	Number of new high school dropouts plus number of new high school graduates not continuing their education and estimated to read below an 8th grade level.	590,000
ABE addition[b]	Number of new grade school dropouts, plus allowance for immigrants of all ages with no high school education who have just gained sufficient proficiency in English to benefit from ABE instruction.	214,000
ESL addition[c]	Number of all who immigrated to U.S. from non-English speaking countries.	643,000
Total	Sum of ASE, ABE and ESL	1,447,000

[a] The average number of high school dropouts per year for 1990-1992 was 359,000 (NCES Dropout Rates in the United States: 1992). For the same period the U.S. Department of Education reports the average number of high school graduates per year was 2.26 million. According to the 1985 Young Adult Literacy Survey (Kirsh, et al.), 40 percent of high school graduates do not go on to college, and 27 percent of these graduates read below an 8th grade level (231,000).

[b] Estimated from census data to be about 109,000 new grade school drop outs, plus about 1/15th of the total number who speak a non-English language at home and completed less than 9 years of school and report speaking English less than "very well" (1/15th of 1,573,000 = 105,000).

[c] The average number of persons who immigrated to the U.S. per year during the 5 years prior to the 1990 census, excluding those who were under 18 years old, is 699,000; the proportion of immigrants to the U.S. from non-English-speaking countries between 1980 and 1990 was 92 percent (U.S. census data).

Estimating the Number of Program Successes. Establishing a basis for estimating the number of clients who received sufficient instructional services to have had their literacy needs significantly reduced is problematic. The data available from the national evaluation do not provide as clear a basis as one might wish. When the study was designed, the plan was to use the results of the analyses of reading achievement tests as the basis for this analysis. As discussed in Chapter 3, however, programs were generally unable to provide valid pre- and posttest scores on clients participating in the study, and analyses of the relatively small number of achievement test scores do not support their use as indicators of literacy-needs reduction.

Consequently, we considered two alternative indicators of client outcome: the time required for instructional advancement, and the time required to achieve self-reported accomplishment of goals.

Instructional advancement: Early in the national evaluation, Department of Education representatives on the study's technical advisory panel suggested that the proportion of clients who move from one instructional level to another be considered an important indicator of program performance.[35] As part of the national evaluation, we obtained information on each client's initial instructional placement, their instructional placement at the close of each study reporting period (every 6 to 8 weeks) and the number of hours of instruction each client received each week in which they were enrolled.

Using advancement in instructional placement as an indicator of reduced literacy needs requires deciding how far clients should advance. For ABE and ESL, there are two reasonable alternatives:

- Moving up one instructional level -- for ABE this is going from the beginning level to the intermediate or from the intermediate to ASE; for ESL it is going from the beginning level to intermediate or from the intermediate level to advanced.

- Attaining an advanced level which meets the intention of the Act -- for ABE that is going to ASE; for ESL it is going from either beginning or intermediate to advanced.

For ASE and most clients in advanced ESL, there is no higher instructional level, so an alternative measure is required. For ASE it is reasonable to use an indicator of program completion, because the adult education program's instruction terminates with high school completion or its equivalency. Since our telephone follow-up survey provides information on the reasons clients terminate instruction, a feasible indicator of program completion for ASE is the respondents' self-report that they left instruction satisfied because they had "completed the program." For clients who enrolled in the ESL-Advanced level, however, there is no comparably clear end point. Since it can be reasonably argued that the purposes of the Act with respect to citizenship and employability require that all ESL clients attain at least the level of advanced ESL, but that requirements thereafter are dependent entirely on the needs of each individual, we decided to count all clients who received instruction at the advanced level of ESL as program successes.

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[35] The federal adult education reporting system collects data on the number of clients in each state who enroll at each instructional level, complete that level, separate before completing that level, and move to a higher level.

Exhibit 5.12 shows the movement of new clients with one or more hour of instruction from their initial instructional placement to their placement at the time they left the program. As the exhibit shows, 59 percent of the clients who began instruction at the beginning ESL level remained at that level of instruction, while 28 percent moved to the intermediate level, and 12 percent had moved to the advanced level by the time they left the program. As these data show, about 1 percent of the ESL-Beginning, 5 percent of the ESL-Intermediate, and 12 percent of the ESL-Advanced clients had moved to ABE or ASE instruction by the time they exited the program. Thus, the target population for ABE and ASE is augmented each year by about 3 percent of the clients whose initial instructional placement is in ESL. This amounts to an annual addition of about 16,300 to the ABE/ASE target group.

Exhibit 5.12
Placement of ESL and ABE Clients When Leaving by Placement at Time of Entry

Instructional Component	Percent of Clients				
	ESL-Beg	ESL-Int	ESL-Adv	ABE-Beg	ABE-Int
ESL-Beginning	59 %	-	-	0.3 %	0.2 %
ESL-Intermediate	28	72 %	-	0.7	0.4
ESL-Advanced	12	23	88 %	0.7	0.3
ABE-Beginning	0.3	1	3	70	-
ABE-Intermediate	0.1	2	5	18	78
ASE	0.9	2	4	11	21
Total Number	438,285	87,382	51,478	70,773	114,251

To operationalize these indicators, we calculated the median number of hours clients received instruction between the time of their initial hour of instruction and the end of the study reporting period in which they advanced. This results in a somewhat generous estimate of the number of successes, since the time needed for clients who had not advanced by the end of the study could not be included in the calculations.[36] Clients who went backward (e.g., from intermediate to beginning levels) were excluded from the analyses because we assumed they were initially misplaced. To determine the number of new clients to which these hour thresholds should apply, we treated each

[36] Since the calculations are based on clients who did advance, only about 25 percent of ABE and 37 percent of ESL, and the time needed for clients who had not advanced by the end of the study could not be included in the calculations, they provide an underestimate of the number of hours needed by most clients to advance.

instructional group separately; that is, we calculated the number of new clients in each level, and applied the appropriate number of hours for that group. The median number of hours to advance by instructional level for ABE and ESL clients are shown in exhibit 5.13. ASE clients who reported they terminated instruction because they completed the program received a median of 45 hours of instruction.

Exhibit 5.13
Median Number of Hours for ABE and ESL Clients to Complete 1 or More Instructional Levels

Instructional Component	Median Number of Hours Needed to Complete
ABE Beginning	32
ABE Intermediate	36
Beginning and Intermediate ABE	65
ESL Beginning	216
ESL Intermediate	136
Beginning and Intermediate ESL	372

Accomplishing self-defined goals: An alternative indicator we considered was the median number of hours received by clients who reported that they left their instructional program satisfied because they "got what they went for or achieved personal goals." Using this criterion, we find that the median number of hours of instruction are those shown in exhibit 5.14.

It is interesting to note the similarities in the hours shown in exhibits 5.13 and 5.14. For ABE, the median number of hours to accomplish personal goals and the number to advance in placement are fairly similar, especially for clients who entered at the intermediate level. For ESL, the number of hours to advance and the number needed to accomplish personal goals are the same for clients at the intermediate level, but beginning level ESL students require much longer to advance to an intermediate level than they need to meet self-defined goals.

Exhibit 5.14
Median Number of Hours for ABE and ESL Clients to Accomplish Self-defined Goals

Instructional Component	Median Number of Hours
ABE Beginning	51 Hours
ABE Intermediate	40
ESL Beginning	64
ESL Intermediate	136

Exhibit 5.15 presents our estimated annual impact on the increase in the program's target population. Because the language of the Act is focused on assisting adults reach at least the secondary school completion level of English language proficiency, we have opted to use instructional advancement, rather than personal goal attainment, as the basis for these estimates.

To estimate the size of the annual increase in the ABE and ESL target population by instructional placement level (i.e., beginning, intermediate, or advanced), we allocated the estimates of annual additions to the target population presented in exhibit 5.11 by the proportion of new-client placements at each sub-component level. Of the ABE clients who received one hour or more of instruction, 42 percent were initially placed in ABE-Beginning and 58 percent in ABE-Intermediate. Of the ESL clients with one hour of instruction or more, 74 percent were initially placed in ESL-Beginning, 16 percent in ESL-Intermediate, and 10 percent in ESL-Advanced.

Exhibit 5.15
Estimated Annual Impact on Increases in the Adult Education Target Population Based on Program Advancement

Instructional Component and Level	Estimated Annual Additions to Target Population	Number of Clients Served by Program Who Attained Sufficient Instructional Hours to Reach ASE or Advanced ESL[a]	Number of Clients Served by Program Who Attained a Sufficient Number of Hours to Advance One Level[b]	Program Successes as a Percent of Estimated Annual Increases in Target Population
ABE: Total	**214,000**	**123,000**	**148,000**	**57 to 69%**
ABE: Beginning	90,000	39,000	63,000	43 to 70%
ABE:Intermediate	124,000	84,000	84,000	68%
ESL: Total	**643,000**	**273,000**	**343,000**	**30 to 53%**
ESL: Beginning	476,000	148,000	218,000	31 to 46%
ESL:Intermediate & Advanced	167,000	125,000	125,000	75%
ASE	**590,000**	**159,000**	**159,000**	**27%**
Total	**1,447,000**	**555,000**	**650,000**	**38 to 45%**

[a] **Defined for ABE**: 65 hours for those entering at ABE-Beginning to move to ASE and 36 hours for those entering at ABE-Intermediate to move to ASE. **For ESL** as: 372 hours for those entering at ESL-Beginning to move to ESL-Advanced, and 136 hours for those entering at ESL-Intermediate to move to ESL-Advanced. **For ASE**: for clients to report that they had completed the program (45 hours).

[b] Defined **for ABE**: for those entering at ABE Beginning to move to ABE-Intermediate (32 hours), and for those entering at ABE-Intermediate to advance to ASE (36 hours). **For ESL**: for those entering at ESL Beginning to move to ESL-Intermediate (216 hours), for those entering at ESL-Intermediate to move to ESL-Advanced (136 hours). **For ASE**: for clients to report that they had completed the program (45 hours).

A range of estimates indicating the extent to which the program is successful in minimizing the annual increase of the ABE, ASE, and ESL population with English literacy needs is presented in exhibit 5.15. The exhibit includes the results of applying both criteria for determining instructional advancement (i. e., advancing one instructional level or attaining ASE or ESL-Advanced), and where these criteria produce different estimates, the table's rightmost column provides the range. As the exhibit shows, each year the program's successes amount to less than half the estimated additions. Overall, new additions to the program's target population exceed relatively generous estimates of program successes by about 800,000.

Proportionately, the program's greatest area of impact is in the area of ABE, and it is having the least effect on stemming the annual growth in the number of potential clients for ASE. As was discussed earlier in this chapter, it should be noted that more than 40 percent of the adults eligible for program services are at least 60 years old and that of this group over 50 percent have less than a 9th grade education (i.e., are in the ABE target group). Thus, it is reasonable to conclude that in addition to services provided by the adult education program, the size of the ABE target population is also diminished considerably each year by the effects of clients' age. Looking toward the future, these analyses suggest that it would be appropriate to reconsider current legislative and programmatic limitations on the use of federal funds to serve clients in ASE.

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APPENDIX A
Study Objectives and Where Addressed

APPENDIX A
STUDY OBJECTIVES AND WHERE ADDRESSED

Objective	Report Location
1. Client populations and patterns of participation. To construct empirically based models of client "flows" through each of the program's service components (ABE, ASE, and ESL) which will permit detailed estimates of client intake, participation, and attrition over time.	Rpt 3: ch 2 Rpt 4: ch 2
2. Factors contributing to client persistence. To identify client background and service-program variables that are positively related to client persistence (or negatively related to client attrition).	Rpt 3: ch 3 Rpt 4: ch 2, ch 3 & 4
3. Reaching adults with basic literacy needs. To identify service-program characteristics that are positively or negatively related to attracting and holding adults with basic literacy needs.	Rpt 4: ch 4 & 5
4. Support and cooperation at the local level. To assess the extent to which Federal and State funds for adult education are effectively supplemented by other resources at the local level.	Rpt 1: ch 3 & 4; Cost Study Rpt
5. Program capacity and demand for services. To develop and compare regional and national measures of unmet (or deferred) demand for adult education services and excess (or under utilized) service capacity, and to assess the extent to which improved management of existing adult education resources might bring supply and demand into closer balance.	Rpt 1: ch 4 Rpt 4: ch 5
6. Participation rates of target populations. To develop estimates of the size and composition of target populations for each of the program's service components and, by relating these estimates to data on program clients, to assess levels and rates of program participation for these target populations.	Rpt 4: ch 5
7. Learning gains. To develop estimates of average learning gains as related to hours of instruction and/or tutoring for each program component and, by applying these estimates to data on participation, to assess aggregate learning outcomes generated by the program over a one-year period.	Rpt 4: ch 3, ch 4 & ch 5
8. Service costs. To develop estimates of average service costs as related to hours of instruction and/or tutoring for each program component and, by relating these estimates to data on participation and learning gains, to assess the service costs associated with producing successful outcomes.	Rpt 1: ch 4 Rpt 4: ch 2 Cost Study Rpt
9. Employment outcomes. To evaluate the extent to which sustained program participation is significantly associated with favorable employment outcomes, using employment outcomes of early leavers as the standard of comparison.	Rpt 4: ch 4
10. Dissemination. To stimulate wider interest in a discussion of policy issues in adult education by means of timely dissemination of findings and interim reports, commissioned papers on selected issues, and a national conference at the conclusion of the study.	Bulletins & Interim Rpts to the field
11. Independent research. To facilitate independent research on adult education by issuing unit-record data files for the national samples of service providers and new clients, along with provisions for linking these two files and high-quality user-oriented technical documentation.	Data tapes & documentation
12. Analytic agenda. To develop recommendations concerning future analytic agendas for adult education, with special reference to further uses of data from the 1992 National Survey of Adult Literacy and the 1990 Census.	Exec. Summary Rpt

APPENDIX B
Data Collection Form: Telephone Follow-up Survey Form

Note:
Copies of other data collection forms are included as Appendices to prior reports, as follows:

First Interim Report - Profiles of Service Providers
Universe Survey of Adult Education Providers
Comprehensive Program Profile Survey

Second Interim Report - Profiles of Client Characteristics
Client Intake Record: Part A and
Client Intake Record: Part B

Third Interim Report - Patterns and Predictors of Client Attendance
Client Update Record

Telephone Follow-up Survey Form

TELEPHONE FOLLOWUP SURVEY FORM

Q#1 **I understand that you were in a (ABE/ESL/ASE/GED) program at (LOCATION) about six months ago. Is that correct?**

☐ Yes ☐ No(no one in household participated in this program)IF THE PARTICIPANT ANSWERED NO TO THIS QUESTION, THEN THE INTERVIEW WAS TERMINATED.

Q#2 **Did you attend THREE OR MORE classes of the (ABE/ESL/ASE/GED) program?**

☐ Yes-3 OR MORE CLASSES ATTENDED ☐ No-2, 1, CLASSES ATTENDED

☐ No - NO CLASSES ATTENDED ☐ [DK/Refused]

Note: Except for Q#19, the remaining questions were asked only of clients with 3 or more hours of instruction.

Q#3 **Did you learn what you wanted to learn from the instruction that you received?**

☐ Yes ☐ No ☐ DK/Refused

To what extent did the educational class or training program help you?

(Questions Q#4 through Q#17 were asked only of clients who had indicated when they enrolled in the program -- on Intake Record Part B -- that this was a "very important" reason that they were taking adult education instruction. Those who indicated the reason was "somewhat important" or "not important" are designated NA.)

Q#4 **To what extent did the educational class or training programs help you to improve reading/writing skills?**

☐ A Lot ☐ Somewhat

☐ Not At All ☐ [DK/Refused]

Q#5 **To what extent did the educational class or training programs help you to improve math skills?**

☐ A Lot ☐ Somewhat

☐ Not At All ☐ [DK/Refused]

Q#6 **To what extent did the educational class or training programs help you to improve speaking and listening skills?**

☐ A Lot ☐ Somewhat

☐ Not At All ☐ [DK/Refused]

Q#7 **To what extent did the educational class or training programs help you to enter a vocational or job training program?**

☐ A Lot ☐ Somewhat

☐ Not At All ☐ [DK/Refused]

Q#8 **To what extent did the educational class or training programs help you to get a job or a better job or qualify for higher pay?**

☐ A Lot ☐ Somewhat

☐ Not At All ☐ [DK/Refused]

Q#9 **To what extent did the educational class or training programs help you to improve job performance?**

☐ A Lot ☐ Somewhat

☐ Not At All ☐ [DK/Refused]

Q#10 **To what extent did the educational class or training programs help you to qualify for United States citizenship?**

☐ A Lot ☐ Somewhat

☐ Not At All ☐ [DK/Refused]

Q#11 **To what extent did the educational class or training programs help you to feel better about yourself?**

☐ A Lot ☐ Somewhat

☐ Not At All ☐ [DK/Refused]

Q#12 **To what extent did the educational class or training programs help you to contribute better to your family and community?**

☐ A Lot ☐ Somewhat

☐ Not At All ☐ [DK/Refused]

Q#13 **To what extent did the educational class or training programs help you to help your children with schoolwork?**

☐ A Lot ☐ Somewhat

☐ Not At All ☐ [DK/Refused]

Q#14 **To what extent did the educational class or training programs help you to become less dependent on others for help?**

☐ A Lot ☐ Somewhat

☐ Not At All ☐ [DK/Refused]

Q#15 **To what extent did the educational class or training programs help you to make others feel better about you?**

☐ A Lot ☐ Somewhat

☐ Not At All ☐ [DK/Refused]

Q#16 **To what extent did the educational class or training programs help you to enter college?**

☐ A Lot ☐ Somewhat

☐ Not At All ☐ [DK/Refused]

Q#17 **Did you attend the educational class or training program to get a GED?**

☐ Yes ☐ No ☐ DK/Refused

Q#18 **Did you attend the educational class to earn a regular High School Diploma?**

☐ Yes ☐ No ☐ DK/Refused

Following Q#19 respondents were asked: "Was that all?" Up to three other responses were recorded.

Q#19 **What was your major reason for leaving your class or instructional program?**

- ☐ Client Left Satisfied - Completed Program
- ☐ Client Left Satisfied - Completed Required Attendance
- ☐ Client Left Satisfied - Got What Went For/Achieved Personal Goals
- ☐ Client Left Satisfied - OTHER (eg- enrolled in school, got job)
- ☐ Left/Outside Events+ Personal Illness, Health Problems
- ☐ Left/Outside Events + Family Responsibilities (includes Child Care)
- ☐ Left/Outside Events + Transportation Problems
- ☐ Left/Outside Events + Change of Job or Work Responsibilities
- ☐ Left/Outside Events + OTHER reasons not to do with the course itself
- ☐ Left Due To Courses - Too many Forms/To many Tests to Take
- ☐ Left Due To Courses - Personal Embarrassment/Personal Discomfort
- ☐ Left Due To Courses - Lack of Progress/Dissatisfied with Program
- ☐ Left Due To Courses - Took too much Time & Energy (eg- too far to drive)
- ☐ Left Due To Courses - Interfered with other (preferred) activities
- ☐ Left Due To Courses - Worried about Personal Safety (eg- bad neighborhoods)
- ☐ Left Due To Courses - OTHER reasons reflective of the program
- ☐ NO REASONS GIVEN+ (can't say, just left)
- ☐ ·NO MORE APPLY·

Questions Q#20 through Q#28 were asked of those clients who had a job when they enrolled.

Q#20 **I see that you were working when you enrolled in the program.**
Are you working now for pay?

☐ Yes (if yes, go to Q#21) ☐ No (If no, go to Q#25) ☐ DK/Refused

Q#21 **Do you still have that same job you had when you enrolled in the program?**

☐ Yes (if yes, go to Q#22) ☐ No (if no, go to Q#26) ☐ DK/Refused

Q#22 **Did what you learned in the program help you with that job? (i.e. the same job you had when you enrolled)**

☐ Yes ☐ No ☐ DK/Refused

Q#23 **Are you working at more than one job? (i.e., at a job in addition to the one you had when you enrolled)**

☐ Yes (If yes, go to Q#24) ☐ No (if no, go to Q#32) ☐ DK/Refused

Q#24 **Did what you learned in the program help you get that second job?**

☐ Yes (if yes, go to Q#32) ☐ No (if no, go to Q#32) ☐ DK/Refused

Q#25 **Have you worked regularly at any time since you left the program? (asked of those <u>not</u> working now.)**

☐ Yes (if yes go to Q#28) ☐ No (if no, go to Q#32) ☐ DK/Refused

Q#26 **Did what you learned help you get a better job than you had? (asked of those who changed jobs.)**

☐ Yes ☐ No ☐ DK/Refused

Q#27 **Did what you learned in the program help you in your current job? (asked of those who changed jobs.)**

☐ Yes ☐ No ☐ DK/Refused

Q#28 **Did what you learned in the program help you with that job? (asked of those not currently working, but who worked regularly since leaving the program.)**

☐ Yes ☐ No ☐ DK/Refused

Questions Q#29 through Q#31 were asked of those clients who were not working when they enrolled.

Q#29 **I see that you were not working when you enrolled in the program. Are you working now for pay?**

☐ Yes (if yes, go to 31) ☐ No (if no, go to Q#30) ☐ DK/Refused

Q#30 **Have you worked at any time since you left the program?**

☐ Yes (if yes, go to 31) ☐ No (if no, go to Q#32) ☐ DK/Refused

Q#31 **Did what you learned in the program help you get the job?**

☐ Yes ☐ No ☐ DK/Refused

Q#32 **Do you have children under the age of 6?**

☐ Yes ☐ No ☐ DK/Refused

Q#33 **How often do you read to or with your children?**

☐ Almost Never

☐ About Once Or Twice A Month

☐ About Once A Week

☐ Nearly Every Day

☐ DK/Refused

Q#34 **Do you feel you need or would like additional educational classes or training?**

☐ Yes ☐ No ☐ DK/Refused

Following Q#35 respondents were asked: "Is that all?" Up to eight other responses were recorded.

Q#35 **What is your reason for wanting additional classes or training?**

- ☐ Academic. . . Reading/Writing
- ☐ Academic. . . Mathematics
- ☐ Academic. . . Understanding English
- ☐ Credentials . To Obtain GED/High School Diploma
- ☐ Credentials . Enter Vocational Or Job Training Program
- ☐ Credentials . Enter College
- ☐ Employment. . Get A Job Or Better Job
- ☐ Employment. . Improve Job Performance
- ☐ Employment. . Increase Income
- ☐ Employment. . Satisfy Employer Or Program Requirements
- ☐ Personal. . . Prepare For Citizenship
- ☐ Personal. . . Improve Self/Feel Better About Myself
- ☐ Personal. . . Contribute To Children
- ☐ Personal. . . Contribute To Church, Community
- ☐ Personal. . . Become Less Reliant On Others
- ☐ Other Reason
- ☐ DK/Refused
- ☐ ·NO MORE APPLY·

For the next few questions, describe how you usually felt about the instruction you received in your adult education program.

Q#36 **Were the lessons at a level you could understand...**

- ☐ Always (1)
- ☐ Most Of The Time (2)
- ☐ Sometimes (3)
- ☐ Never (4)
- ☐ [Not Applicable/Do Not Remember/Refused]

Q#37 **Were the instructional materials helpful...**

☐ Always ☐ Most Of The Time

☐ Sometimes ☐ Never

☐ [Not Applicable/Do Not Remember/Refused]

Q#38 **Did your teacher work with small groups of students...**

☐ Always ☐ Most Of The Time

☐ Sometimes ☐ Never

☐ [Not Applicable/Do Not Remember/Refused]

Q#39 **Was the teacher or aide available to help you individually with the lessons...**

☐ Always ☐ Most Of The Time

☐ Sometimes ☐ Never

☐ [Not Applicable/Do Not Remember/Refused]

Q#40 **Was there enough practice time in the class...**

☐ Always ☐ Most Of The Time

☐ Sometimes ☐ Never

☐ [Not Applicable/Do Not Remember/Refused]

Q#41 **Were questions from students encouraged by the teacher...**

☐ Always ☐ Most Of The Time

☐ Sometimes ☐ Never

☐ [Not Applicable/Do Not Remember/Refused]

Q#42 **Were your questions answered...**

☐ Always ☐ Most Of The Time

☐ Sometimes ☐ Never

☐ [Not Applicable/Do Not Remember/Refused]

Q#43 **Did you have access to computers in your instructional program?**

☐ Yes ☐ No ☐ DK/Refused

Q#44 **Were they helpful to you...**

☐ Always ☐ Most Of The Time

☐ Sometimes ☐ Never

☐ [Not Applicable/Do Not Remember/Refused]

Q#45 **Are you attending any educational classes or training program now?**

☐ Yes ☐ No ☐ DK/Refused

Following Q#46 respondents were asked: "Is that all?" Up to four other responses were recorded.

Q#46 **What kind of educational class or program are you attending?**

☐ English Language Skills

☐ Math Skills

☐ GED/High School

☐ Vocational/Job Training

☐ Community College/College Level

☐ Citizenship

☐ Other

☐ DK/Refused

☐ ·NO MORE APPLY·

Q#47 **Do you plan to enroll in any educational classes or training program in the future?**

☐ Yes ☐ No ☐ DK/Refused

Q#48 **When do you plan to take the classes/program?**

☐ Before Next Year

☐ Next Year

☐ Within The Next Three Years

☐ Longer Than Three Years From Now

☐ DK/Refused

Following Q#49 respondents were asked: "Is that all?" Up to five other responses were recorded.

Q#49 **What educational classes or training program do you plan to take?**

- ☐ English Language Skills
- ☐ Math Skills
- ☐ GED/High School
- ☐ Vocational/Job Training
- ☐ Community College/College Level
- ☐ Citizenship
- ☐ Other
- ☐ DK/Refused
- ☐ ·NO MORE APPLY·

APPENDIX C
Sampling Design, Data Collection, and Standard Errors

Sample of Programs and Clients

The study objectives called for collecting of information for a probability sample of approximately 50,000 new clients in 150 programs. To reach these objectives, the study attempted to develop a sample of clients with a sampling rate of approximately 1 in 60 new clients.

The first step in the selection process was to group the programs by the four Census regions. Within each region, they were then ordered by their enrollments for the previous year as reported in their response to the Universe Survey of Adult Education Providers. Eighteen programs were determined to be so large as to fall into the study with certainty (a probability of selection equal to one). These 18 "certainty programs" all had enrollments of 20,000 or more, or more than 1/150 of all projected new enrollments.

To ensure their inclusion, small programs with 300 or fewer clients were also treated separately. Every sixtieth small program was selected for inclusion in the Study. There were 20 small programs selected.

Since the study target was a total of approximately 150 programs and 50,000 clients, we determined the total enrollment of all programs that were neither certainty programs nor small programs and divided by 112, which was the number of programs that were needed to reach the target of 150. The result--21,948 clients--was the sampling interval that was used to select the remaining "mid-sized" programs. Within each Census region, the mid-sized programs were ordered by size and sample programs were selected systematically with probability proportionate to their reported enrollment, using a random starting point between 1 and 21,948.

This process provided the study with the programs to be selected. In the few cases (25) where programs were unable to participate, they were replaced by randomly selecting one of the programs that fell closest to the originally selected program in the list of providers.

In order to maintain the desired overall selection probability for clients at the level of about 1 in 60, it was necessary to select a sample of sites and, in some instances a sample of clients within sites, for each of the certainty programs and most of the mid-sized programs selected for the sample. In order to make it relatively easy for programs to participate in the study, we adopted a strategy that limited the number of their sites included in the study sample but adequately reflected variations in size and other characteristics of interest. For the small sites, all sites and clients are included. For large and mid-sized programs the process followed the following guidelines:

- Lists of program sites and their enrollments were obtained.

- When a program had several sites they were assigned to one of a number of "clusters." The number of clusters developed for a program depended on the enrollments which they reported and number of sample clients needed per program.

- If the *number* of clients in a site or cluster was significantly larger than the number needed for the sample from that program, a sample of clients in that site or cluster was selected.

In two instances, programs that were selected from the group of small programs closed after their selection for participation. These programs were not replaced, inasmuch as the active "life" of programs is of interest to the study. Ten other programs, subsequent to being selected and having agreed to participate in the Study, elected to not participate. These programs, none of which were certainty programs, left the Study at too late a date to be replaced.

Data Collection Procedures and Processing

The research design for the evaluation incorporated the following data collection activities:

Universe Survey: This was a survey of all providers of adult education which received monies through the Basic State Grants portion of the federal Adult Education Act during 1989-1990. A mail survey, with extensive follow-up, was implemented in October and November 1990. Responses were obtained from 2,619 (93 percent) of the 2,819 local service providers. Of the respondents, 306 (12 percent) were interviewed by telephone, and were asked only a subset of the questions from the mail questionnaire.

Comprehensive Program Profile: This was a survey to be completed by the directors of the programs participating in the longitudinal phase of the study. Of the 150 selected programs, 131 actually completed profiles and began participation in the study.

Client Intake Record: This information was obtained on the sample of clients who enrolled in adult education programs during the twelve month period which began in mid-April 1991. The intake record consisted of two parts. The first part (Intake A) was completed from program intake records. The second part (Intake B) was to be completed by or for newly enrolled clients who attended at least one instructional session. We received Intake A forms on 22,548 clients and Intake B forms on 13,845 clients (82 percent, 90 percent weighted, of those clients with Update forms indicating they began instruction). These forms provided demographic information about clients and their reasons for participation in the program. Exhibit C.1 compares

characteristics of clients for whom we received an Intake B with clients for whom we did not receive an Intake B, after weight adjustments have been made (the characteristics reported are from Intake A forms).

Exhibit C.1
Comparison of Selected Characteristics of Clients With and Without Client Intake Record Part B Who Received At Least 1 Hours of Instruction

Variable	Value	Clients With B Forms			Clients Without B Forms		
		ABE	ASE	ESL	ABE	ASE	ESL
Gender	Male	40 %	38 %	46 %	40 %	37 %	50 %
	Female	60	62	54	60	63	50
Race Ethnicity	American Indian or Alaskan Native	3	5	0	1	2	1
	Asian or Pacific Islander	2	2	20	3	3	28
	Black, not of Hispanic Origin	26	14	1	23	20	2
	Hispanic	10	11	72	9	9	59
	White, not of Hispanic origin	59	68	6	64	66	10
Age	16-21	32	41	22	32	43	21
	22-30	30	29	40	29	25	37
	31-44	28	23	27	30	23	32
	45 & Older	10	7	11	9	8	10
Highest Diploma	None	83	86	46	85	91	57
	GED Certificate	3	3	1	3	2	0
	High School Diploma	11	7	30	12	5	25
	Technical Certificate	1	1	9	0	0	4
	A.A. Degree	0	0	3	0	0	2
	4 yr College Graduate	0	0	8	0	0	6
	Other	1	1	3	0	1	6
Marital status	Now Married	31	31	38	43	33	52
	Widowed	2	1	2	1	3	1
	Divorced	10	10	3	10	9	3

Variable	Value	Clients With B Forms			Clients Without B Forms		
		ABE	ASE	ESL	ABE	ASE	ESL
	Separated	7	6	4	4	3	2
	Never married	50	52	53	42	53	43
Region	North Central	31	29	6	38	36	18
	Northeast	22	16	5	11	9	8
	South	37	34	6	43	35	14
	West	10	22	83	8	20	60

Client Update Record: This form was completed by program staff and provided instructional and attendance data on 18,461 of the sampled clients for 18 months after they began instruction.

Client Test Data: When possible programs provided scores on standardized tests of basic skills given at the time of enrollment for clients in the study. One or more posttests were administered with the goal being that tests be given after 70 and 140 hours of instruction. Posttest data were received on 1,919 clients from 65 local programs.

Telephone Follow-up Interview: Questions regarding employment status, accomplishment of clients' personal objectives, and an assessment of the instruction received were asked of all clients who had completed Intake B and who had been separated from the program for a period of six months by the end of data collection (October 1993) through a telephone survey. Telephone surveys were attempted for 10,273 clients and completed for 5,401.

To keep costs within reasonable bounds, the evaluation was designed to rely heavily on staff from local programs for the compilation and transmission of data. Local personnel were trained in the data collection requirements in the Spring of 1991. Monitoring and related quality control procedures were implemented on an on-going basis, and programs regularly provided follow-up information by telephone and mail. Where necessary, supplemental training was provided.

All of the data collection instruments were designed so they could function as source documents for data processing purposes. When data collection instruments were received, they were carefully reviewed for completeness and legibility by program staff. Where needed, follow-up telephone calls to local programs were made to clarify or complete particular items. Following this manual edit, coding of open-ended responses was done in accordance with standard research procedures. Forms were then optically scanned, and computer editing was conducted under the

program staff. Where needed, follow-up telephone calls to local programs were made to clarify or complete particular items. Following this manual edit, coding of open-ended responses was done in accordance with standard research procedures. Forms were then optically scanned, and computer editing was conducted under the guidance of specific editing instructions developed for each form. These generally consisted of checks for completeness, accuracy, internal consistency, and out-of-range values. When needed, local programs were contacted again to obtain missing information or resolve anomalies in the data.

Sampling Weights

The weights used to develop estimates from the data collected in the national evaluation were designed to reflect the selection probabilities of programs and clients, and to minimize any biases from the exclusion of sample programs that did not agree to participate in the study, either initially, or at the intake stage. Nonresponse adjustments were developed separately for each Census region and each of the three program size groups: large, intermediate, and small. The sampling weights and nonresponse adjustments used for estimates of program characteristics and estimates based on intake data are described in detail in appendix A of the First Interim Report and appendix C of the Second Interim Report.

Because two of the programs that failed to provide adequate client update data were very large certainty programs (Miami, Florida and Chicago, Illinois), we opted not to make further nonresponse adjustments for estimates based on update data. Such adjustments would have substantially increased the sampling errors for these estimates and it was not clear that they would have been effective in controlling nonresponse bias. Thus, the estimates based on client update information are estimates of national totals, ratios, and percents for all programs other than the two that were excluded. An analysis of intake estimates with and without the inclusion of these two programs did not show any substantial differences in estimates of ratios and percents.

The Telephone Survey

The Telephone Follow-up Survey provides information about the quality of instruction, the reasons for termination, and the results of instruction from a subsample of clients 6 months after they left the program. The survey was of clients who had completed at least one hour of instruction and for whom we received a completed Client Intake Record: Part B (the data on Part B includes the client's telephone number and other information which permits a telephone follow-up). Attempts were made to contact all clients who met the selection criteria.

An examination of the sample of clients included in the Follow-up Telephone Survey revealed that one could predict with considerable accuracy whether a client met the telephone survey selection criteria (i.e., whether an interview would be attempted), and, given a client's selection, whether contact would be made[1]. The high degree of predictability is indicative of a nonrandom system, and indicates that tabulation of responses to the telephone survey will yield biased estimates of responses that would be given by the entire population. Hence, for this report, a separate weighting variable was calculated and used for the telephone sample. Briefly stated, the weights were adjusted by using a probit regression to predict the probability of a completed telephone interview and using that probability as an adjustment to the original client-level weight. The adjustment was made by subtracting the probability obtained from the probit from 1 and dividing the orginal client weight by the result. The result is the adjusted weight for the telephone survey respondents.

Exhibit C.2 shows how the respondents to the telephone survey compare to the population of all those receiving instruction. The weighted groups are very similar, with the completed sample having fewer ESL clients and more ASE clients than are seen in the population, and the telephone sample accumulating considerably fewer hours and weeks of instruction. In order to be eligible for the telephone follow-up one had to be inactive for six months, so clients who attend for long periods were unlikely to be included, thereby reducing the median hours and weeks of instruction.

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[1] The regression used a total of 33 variables (mostly dichotomous variables derived from intake form A and update data). The following variables were significant at .01: placement in ESL or ABE, female (negative), American Indian, Asian, Black, Hispanic, unknown country of birth, home ownership (negative), married (negative), and weeks enrolled in year 1 (negative). The measure of model fit, -2 Loglikelihood (-2LLR)= 1292 p = .0001. -2LLR yields a measure of statistical significance of the improvement over the null model (see, for example Henri Theil 1971., **Principles of Econometrics**, John Wiley and Sons, New York.)

Exhibit C.2
Comparison of Selected Characteristics of Weighted Samples of Telephone Survey Respondents and All Clients With 1 or More Hours of Instruction

Variable	Value	Population			Telephone		
		ABE (24%)	ASE (30%)	ESL (46%)	ABE (24%)	ASE (37%)	ESL (39%)
Gender	Male	40	38	46	43	39	48
	Female	60	62	54	57	61	52
Race Ethnicity	American Indian or Alaskan Native	3	5	0	5	6	1
	Asian or Pacific Islander	2	2	21	2	2	20
	Black, not of Hispanic Origin	25	15	1	23	13	2
	Hispanic	10	11	71	9	9	71
	White, not of Hispanic origin	60	68	6	61	70	6
Highest Diploma	None	89	97	47	82	85	48
	GED Certificate	3	3	1	3	3	1
	High School Diploma	11	7	30	13	8	28
	Technical Certificate	1	1	9	1	2	7
	A.A. Degree	0	0	3	0	0	2
	4 yr College Graduate	0	0	8	0	1	9
	Other	1	1	3	1	1	4
Marital status	Now Married	32	31	39	30	31	43
	Widowed	2	2	2	2	1	1
	Divorced	10	10	3	10	10	3
	Separated	6	5	4	6	6	3
	Never married	49	52	53	52	52	49

Variable	Value	Population			Telephone		
		ABE (24%)	ASE (30%)	ESL (46%)	ABE (24%)	ASE (37%)	ESL (39%)
Reason for Enrollment	Required by employer	2	2	5	3	2	6
	Required by another program or agency	13	9	4	11	9	5
	To satisfy family or friends	8	9	6	9	9	7
	To satisfy other personal or employment goals	77	80	84	78	80	82
Born in U.S.	Yes	91	92	2	92	92	4
	No	9	8	98	8	8	96
Current living arrangement	Own home	24	28	8	24	26	9
	Renting	48	43	70	47	42	70
	Temporarily living with someone else	27	28	21	28	30	20
	No regular place of residence	1	1	1	2	1	1
How often do you read to your kids?	Almost never	26	22	39	26	24	34
	About once or twice a month	11	14	10	11	13	13
	About once a week	28	28	23	27	27	24
	Nearly every day	34	36	28	36	37	30
Live at the same address as 5 years ago	Yes	34	35	9	37	37	12
	No	66	65	91	63	63	88
Did you live outside the U.S.	Yes	9	6	77	8	6	73
	No	91	94	23	92	94	27
Did you live in the same state	Yes	81	79	72	84	80	75
	No	19	21	28	16	20	25
Did you live in the same county	Yes	86	82	87	85	83	87
	No	14	18	13	15	17	13

Variable	Value	Population			Telephone		
		ABE (24%)	ASE (30%)	ESL (46%)	ABE (24%)	ASE (37%)	ESL (39%)
Region	North Central	32	30	7	32	30	8
	Northeast	21	15	5	24	18	7
	South	38	34	6	36	32	8
	West	9	22	82	9	20	76
Hours of instruction	Median	36	28	114	34	29	55
	Mean	84	68	224	61	53	93
Weeks of instruction	Median	11	8	21	10	8	10
	Mean	20	17	30	16	14	17

Sampling Errors

The client statistics presented in this report are based on a stratified, multistage probability sample as described above. All program and client estimates except those based on the Universe Survey of programs are subject to sampling error. For estimates based on data from the Comprehensive Program Profile, formulas for direct estimation of sampling errors of program characteristics were presented in appendix D of the First Interim Report. Estimates of ratios and percents based on the sample of 131 programs that completed profiles have relative large sampling errors: the primary design goal of the program sample design was to provide the basis for an efficient sample of clients, not to provide estimates of program characteristics.

Estimated standard errors are presented for selected program characteristics in exhibit C.3 and for selected client characteristics in exhibit C.4. Standard errors were estimated using PC CARP software developed by the Statistical Laboratory at Iowa State University. The standard errors can be used to construct confidence intervals for estimates based on probability samples. For example, a 95 percent confidence interval for the estimated percent of ESL clients in the age group 31-45 would be 29.1 ± (1.96 × 1.2). Thus, 95 percent confidence interval is between 26.7 percent and 31.4 percent. A 95 percent confidence interval for the percent of ABE clients receiving 12 or more hours of instruction would be 67.2 ± (1.96 × 2.0) or between 63.3 percent and 71.1 percent.

Exhibit C.3
Standard Errors for Estimated Percentages of Selected Variables

Program Characteristic	Percent of programs	Standard error
Sponsor		
Local public school	70 %	5.7 %
Community college	15	3.9
PLO	9	3.9
Technical institute	5	2.5
Regional education service agency	1	0.1
Urbanicity		
Large city in major metropolitan area	3 %	2.8 %
Remainder of major metropolitan area	9	2.5
Small metropolitan area	23	4.7
Nonmetropolitan area	64	4.8
Percent full-time staff	13 %	1.3 %

Clients' Support Service Needs	Estimate of Percent of Programs Meeting Needs of Clients	Standard Error
Counseling	91 %	3.9 %
Job search assistance	82	4.9
Transportation	52	7.0
Child care	43	6.6
Translator services	39	6.6
Financial assistance	37	6.3
Case management	31	6.1
Health services	30	6.4

Exhibit C.4
Standard Errors for Estimated Percentages from Selected Data Collected from Clients and Program Directors

Program Characteristic	ESL		ABE		ASE	
	Estimate	Standard error	Estimate	Standard error	Estimate	Standard error
Region						
Northeast	20.6 %	3.7 %	36.9 %	2.8 %	42.4 %	4.5 %
North Central	24.4	1.6	35.2	2.6	40.4	2.5
South	19.9	5.8	39.2	5.8	40.9	6.5
West	81.9	10.6	4.3	2.5	13.8	8.2
Race/ Ethnicity						
American Indian/ Alaskan Native	0.4	0.2	1.8	0.9	3.9	1.9
Asian or Pacific Islander	18.9	2.2	1.7	0.5	1.8	0.8
Black, not of Hispanic Origin	4.3	2.1	38.3	9.0	19.7	4.8
Hispanic	68.5	4.1	11.6	3.0	12.8	4.0
White, not of Hispanic Origin	7.9	1.9	46.6	9.0	61.8	6.0
Sex						
Female	46.2	1.7	42.9	1.7	40.5	1.5
Male	53.7	1.7	57.1	1.7	59.5	1.5
Age						
16-21	21.9	0.7	27.9	1.8	44.4	2.0
22-30	38.8	0.7	29.8	0.9	27.3	1.0
31-45	29.1	1.2	31.8	1.7	22.5	1.0
Over 45	10.1	0.9	10.6	1.6	5.8	0.9
Began Instruction						
Yes	92.6	2.0	86.0	2.0	85	2.0
Received 12 hours of instruction						
Yes	84.8	4.0	67.2	2.0	63.7	1.0

APPENDIX D
Persistence Tables

Exhibit D.1
Proportion of All New Beginning Clients Exiting in Specified Number of Months from Time of Entry

Number of Months Before Exit	Time of Entry (Weighted number of enrolling clients)						
	Apr-May (134,002)	Jun-Jul (129,080)	Aug-Sep (502,763)	Oct-Nov (195,324)	Dec-Jan (214,802)	Feb-Mar (298,444)	Total (1,474,415)
0-1	0.42	0.45	0.24	0.37	0.34	0.33	0.33
1-2	0.09	0.08	0.13	0.11	0.11	0.11	0.11
2-3	0.06	0.07	0.10	0.11	0.12	0.11	0.10
3-4	0.03	0.05	0.03	0.06	0.09	0.06	0.05
4-5	0.06	0.04	0.05	0.05	0.05	0.03	0.04
5-6	0.03	0.03	0.05	0.06	0.04	0.03	0.04
6-7	0.02	0.02	0.04	0.04	0.01	0.02	0.03
7-8	0.02	0.03	0.08	0.02	0.02	0.02	0.04
8-9	0.02	0.01	0.04	0.02	0.02	0.02	0.03
9-10	0.02	0.04	0.02	0.02	0.02	0.02	0.02
10-11	0.02	0.04	0.01	0.01	0.02	0.01	0.01
11-12	0.06	0.01	0.02	0.02	0.01	0.01	0.02
Continuing	0.15	0.14	0.20	0.13	0.15	0.24	0.18

Exhibit D.2
Proportion of All New Beginning ESL Clients Exiting in Specified Number of Months from Time of Entry

Number of Months Before Exit	Time of Entry (Weighted number of enrolling clients)						
	Apr-May (62,284)	Jun-Jul (56,172)	Aug-Sep (292,864)	Oct-Nov (68,840)	Dec-Jan (93,557)	Feb-Mar (177,463)	Total (751,180)
0-1	0.31	0.35	0.18	0.31	0.28	0.25	0.24
1-2	0.07	0.05	0.14	0.09	0.08	0.08	0.10
2-3	0.05	0.07	0.09	0.11	0.09	0.09	0.09
3-4	0.03	0.07	0.03	0.05	0.07	0.07	0.05
4-5	0.08	0.04	0.04	0.04	0.05	0.02	0.04
5-6	0.03	0.02	0.05	0.05	0.06	0.05	0.05
6-7	0.02	0.02	0.03	0.04	0.01	0.01	0.02
7-8	0.02	0.02	0.09	0.03	0.02	0.02	0.05
8-9	0.01	0.01	0.04	0.03	0.03	0.03	0.03
9-10	0.02	0.06	0.02	0.03	0.03	0.02	0.03
10-11	0.01	0.07	0.01	0.01	0.03	0.00	0.02
11-12	0.12	0.00	0.02	0.02	0.02	0.01	0.03
Continuing	0.23	0.20	0.25	0.18	0.23	0.35	0.26

Exhibit D.3
Proportion of All New Beginning ABE Clients Exiting in Specified Number of Months from Time of Entry

Number of Months Before Exit	Time of Entry (Weighted number of enrolling clients)						
	Apr-May (30,126)	Jun-Jul (29,912)	Aug-Sep (81,458)	Oct-Nov (55,374)	Dec-Jan (47,788)	Feb-Mar (40,918)	Total (285,576)
0-1	0.49	0.42	0.30	0.37	0.34	0.44	0.37
1-2	0.10	0.10	0.13	0.12	0.12	0.15	0.12
2-3	0.06	0.08	0.12	0.12	0.14	0.11	0.11
3-4	0.04	0.04	0.03	0.08	0.11	0.05	0.06
4-5	0.06	0.04	0.06	0.05	0.08	0.04	0.06
5-6	0.03	0.05	0.06	0.06	0.02	0.02	0.04
6-7	0.03	0.02	0.05	0.04	0.01	0.01	0.03
7-8	0.01	0.04	0.05	0.01	0.01	0.03	0.03
8-9	0.04	0.01	0.04	0.02	0.03	0.01	0.03
9-10	0.02	0.02	0.01	0.02	0.02	0.02	0.01
10-11	0.02	0.02	0.00	0.01	0.01	0.01	0.01
11-12	0.01	0.02	0.01	0.01	0.01	0.01	0.01
Continuing	0.10	0.13	0.15	0.09	0.09	0.10	0.11

Exhibit D.4
Proportion of All New Beginning ASE Clients Exiting in Specified Number of Months from Time of Entry

Number of Months Before Exit	Time of Entry (Weighted number of enrolling clients)						
	Apr-May (41,095)	Jun-Jul (42,704)	Aug-Sep (127,219)	Oct-Nov (69,344)	Dec-Jan (73,136)	Feb-Mar (79,909)	Total (433,407)
0-1	0.55	0.59	0.35	0.43	0.41	0.46	0.44
1-2	0.12	0.08	0.13	0.10	0.14	0.14	0.12
2-3	0.08	0.07	0.11	0.09	0.14	0.15	0.11
3-4	0.02	0.04	0.04	0.05	0.09	0.05	0.05
4-5	0.04	0.03	0.06	0.06	0.05	0.02	0.04
5-6	0.03	0.03	0.05	0.06	0.02	0.01	0.04
6-7	0.01	0.01	0.04	0.03	0.01	0.02	0.03
7-8	0.02	0.02	0.05	0.02	0.01	0.02	0.03
8-9	0.02	0.01	0.03	0.02	0.01	0.02	0.02
9-10	0.01	0.01	0.01	0.02	0.01	0.01	0.01
10-11	0.02	0.02	0.00	0.01	0.01	0.01	0.01
11-12	0.01	0.01	0.01	0.01	0.01	0.02	0.01
Continuing	0.07	0.07	0.12	0.10	0.09	0.06	0.09

Exhibit D.5
Estimates of Persistence for All New Education Clients

1	2	3	4	5	6	7
Months of Activity Between Enrollment and Termination	Number Active at the Start of Month	Number Leaving During the Month	Proportion of Those Starting the Month who Left During the Month	Total Client Months Logged During this Month	Aggregate Client Months Expected at Start of Month	Mean Number of Months Remaining at Start of Month
0-1	100,000	32,552	0.33	83,724	544,784	5.45
1-2	67,448	11,230	0.17	61,833	461,060	6.84
2-3	56,218	10,009	0.18	51,213	399,228	7.10
3-4	46,209	5,048	0.11	43,685	348,014	7.53
4-5	41,161	4,410	0.11	38,956	304,330	7.39
5-6	36,751	4,339	0.12	34,582	265,374	7.22
6-7	32,412	2,587	0.08	31,119	230,793	7.12
7-8	29,825	3,875	0.13	27,888	199,674	6.69
8-9	25,951	2,765	0.11	24,568	171,786	6.62
9-10	23,185	1,887	0.08	22,242	147,218	6.35
10-11	21,299	1,263	0.06	20,667	124,976	5.87
11-12	20,036	1,899	0.09	19,086	104,309	5.21
12-13	18,136	1,932	0.11	17,171	85,223	4.70
13-14	16,205	5,115	0.32	13,647	68,052	4.20
14-15	11,089	1,193	0.11	10,493	54,405	4.91
15-16	9,896	976	0.10	9,408	43,912	4.44
16-17	8,920	714	0.08	8,563	34,504	3.87
17-18	8,206	1,426	0.17	7,493	25,942	3.16
Continuing	6,780	-	-	-	-	-

Exhibit D.6
Estimates of Persistence for All New ESL Education Clients

1	2	3	4	5	6	7
Months of Activity Between Enrollment and Termination	Number Active at the Start of Month	Number Leaving During the Month	Proportion of Those Starting the Month who Left During the Month	Total Client Months Logged During this Month	Aggregate Client Months Expected at Start of Month	Mean Number of Months Remaining at Start of Month
0-1	100,000	24,233	0.24	87,883	678,836	6.79
1-2	75,767	10,182	0.13	70,676	590,952	7.80
2-3	65,585	8,765	0.13	61,202	520,277	7.93
3-4	56,820	4,863	0.09	54,388	459,074	8.08
4-5	51,956	3,978	0.08	49,967	404,687	7.79
5-6	47,978	4,719	0.10	45,619	354,719	7.39
6-7	43,260	2,363	0.05	42,078	309,100	7.15
7-8	40,897	5,021	0.12	38,386	267,022	6.53
8-9	35,875	3,229	0.09	34,261	228,636	6.37
9-10	32,646	2,541	0.08	31,376	194,376	5.95
10-11	30,105	1,612	0.05	29,299	163,000	5.41
11-12	28,493	2,566	0.09	27,210	133,701	4.69
12-13	25,927	2,775	0.11	24,539	106,491	4.11
13-14	23,151	9,311	0.40	18,496	81,952	3.54
14-15	13,840	1,412	0.10	13,134	63,457	4.59
15-16	12,428	1,276	0.10	11,790	50,323	4.05
16-17	11,152	865	0.08	10,719	38,534	3.46
17-18	10,287	1,790	0.17	9,392	27,814	2.70
Continuing	8,496	-	-	-	-	-

Exhibit D.7
Estimates of Persistence for All New ABE Education Clients

1	2	3	4	5	6	7
Months of Activity Between Enrollment and Termination	Number Active at the Start of Month	Number Leaving During the Month	Proportion of Those Starting the Month who Left During the Month	Total Client Months Logged During this Month	Aggregate Client Months Expected at Start of Month	Mean Number of Months Remaining at Start of Month
0-1	100,000	37,446	0.37	81,277	446,161	4.46
1-2	62,554	12,299	0.20	56,404	364,884	5.83
2-3	50,255	11,178	0.22	44,666	308,480	6.14
3-4	39,076	5,840	0.15	36,157	263,814	6.75
4-5	33,237	5,578	0.17	30,448	227,657	6.85
5-6	27,659	4,302	0.16	25,508	197,210	7.13
6-7	23,357	3,089	0.13	21,812	171,702	7.35
7-8	20,268	2,653	0.13	18,941	149,890	7.40
8-9	17,615	2,602	0.15	16,314	130,949	7.43
9-10	15,012	1,462	0.10	14,281	114,635	7.64
10-11	13,550	1,015	0.07	13,042	100,354	7.41
11-12	12,535	1,153	0.09	11,958	87,311	6.97
12-13	11,382	1,043	0.09	10,860	75,353	6.62
13-14	10,339	855	0.08	9,911	64,493	6.24
14-15	9,483	955	0.10	9,006	54,582	5.76
15-16	8,528	583	0.07	8,237	45,576	5.34
16-17	7,945	500	0.06	7,695	37,339	4.70
17-18	7,446	1,327	0.18	6,782	29,643	3.98
Continuing	6,119	-	-	-	-	-

Exhibit D.8
Estimates of Persistence for All New ASE Education Clients

1	2	3	4	5	6	7
Months of Activity Between Enrollment and Termination	Number Active at the Start of Month	Number Leaving During the Month	Proportion of Those Starting the Month who Left During the Month	Total Client Months Logged During this Month	Aggregate Client Months Expected at Start of Month	Mean Number of Months Remaining at Start of Month
0-1	100,000	43,805	0.44	78,097	378,979	3.79
1-2	56,195	12,286	0.22	50,052	300,881	5.35
2-3	43,909	11,339	0.26	38,239	250,830	5.71
3-4	32,569	4,877	0.15	30,131	212,591	6.53
4-5	27,692	4,355	0.16	25,514	182,460	6.59
5-6	23,337	3,614	0.15	21,530	156,946	6.73
6-7	19,723	2,613	0.13	18,417	135,416	6.87
7-8	17,110	2,691	0.16	15,765	116,999	6.84
8-9	14,419	2,077	0.14	13,380	101,235	7.02
9-10	12,342	1,051	0.09	11,816	87,854	7.12
10-11	11,291	833	0.07	10,874	76,038	6.73
11-12	10,458	1,253	0.12	9,831	65,164	6.23
12-13	9,205	1,054	0.11	8,677	55,332	6.01
13-14	8,150	700	0.09	7,800	46,655	5.72
14-15	7,450	944	0.13	6,978	38,855	5.22
15-16	6,506	726	0.11	6,143	31,877	4.90
16-17	5,780	602	0.10	5,479	25,735	4.45
17-18	5,178	871	0.17	4,742	20,256	3.91
Continuing	4,307	-	-	-	-	-

Exhibit D.9
Mean Number of Weeks of Enrollment, by Month of Enrollment, Region, and Component
(*N* = 15,870)

Region and Component		Mean Weeks of Enrollment for Each Month of Enrollment												
		Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Overall
Northeast	ESL	29	19	33	25	42	14	22	12	31	27	36	30	29
	ABE	19	21	21	9	23	32	27	29	23	17	15	20	21
	ASE	14	12	12	18	17	26	12	19	19	15	17	13	15
North Central	ESL	19	22	21	17	30	17	24	20	23	24	23	23	22
	ABE	18	13	13	17	12	19	15	22	20	19	16	12	17
	ASE	16	18	15	14	19	17	18	28	20	18	17	15	18
South	ESL	18	10	12	22	19	16	13	25	25	15	11	23	18
	ABE	20	20	15	18	19	20	20	33	24	19	18	18	20
	ASE	14	11	10	14	13	10	13	16	20	23	19	19	16
West	ESL	20	30	39	43	20	33	27	41	22	28	23	34	32
	ABE	17	32	10	15	23	17	28	23	32	24	20	19	22
	ASE	17	18	19	16	10	13	15	18	22	18	20	22	18
Overall	ESL	28	28	37	37	22	29	26	40	23	27	22	32	30
	ABE	19	19	15	16	18	21	21	28	22	19	17	16	20
	ASE	15	15	13	15	14	14	14	23	20	18	18	18	17

Note: Number of weeks of enrollment is defined as the number of weeks that elapsed between initial instruction and final departure of the client from the program.

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APPENDIX E
Methodology of the Learning Gains Study
(A Supplement to Chapter 3)

Methodology of the Learning Gains Study

A primary aim of the learning gains analysis was to estimate the effects of instruction by determining whether student achievement was related to attendance in adult education (e.g., total hours of instruction across all instructional settings). In order to maximize program cooperation with respect to the evaluation's primary objective of describing and estimating the national Adult Education Program population, a design trade-off was made in concentrating data collection on program participation while making the reporting of achievement test data voluntary. Since greater research control over the collection of learning outcome data was believed to be unfeasible (e.g., through the use of a quasi-experimental design), methods of statistical control were needed to attain the objectives of the analysis. A regression framework was therefore used to assess the effects of attendance (and other factors) on student achievement in adult education.

Method

Under the regression framework used, posttest performance was the outcome of interest, and the regression coefficient for total hours of instruction represented the overall effect of instruction. The validity of causal inferences based on this approach, however, depended on controlling for other variables related to the posttest. This in turn, depended on specifying an appropriate regression model that included both the relevant variables and a causal analysis strategy that properly controlled for intervening and extraneous variables.

Design

Indicators of student attendance were viewed as pivotal to the learning gains analysis because the logic of the evaluation was that literacy outcomes should be a positive function of student "persistence" in the program (i.e., hours of instruction). In operationalizing the logic of the evaluation, student persistence was measured by hours of instruction between a pretest and posttest, and the effect of persistence on student achievement (i.e., posttest performance) was estimated using the ordinary least squares (OLS) linear multiple regression model. The analysis strategy statistically controlled for the influence of other independent variables not consequent to posttest performance (e.g., student background, motivation, ability, and variations in program resources).

It was important in specifying an appropriate regression model to identify predictors relevant to posttest performance and to consider the order in which predictors were entered in the regressions. This appreciation argued for the use of a hierarchical analysis model in which a sequence of seven blocks of predictors were entered cumulatively into the regression equation for each of three models (one each for ESL, ABE, and ASE). The choice of the hierarchical strategy[1] was based on the logic of causal priority (see, for example,

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[1] Predictors entered in later blocks should not be plausible causes of prior variables entered in earlier blocks. For example, motivation for enrollment in adult education is not a plausible cause of a student's age, but age can plausibly influence one's motivation for enrolling in adult education.

Cohen and Cohen [1983]), and the seven block sequence was derived from exploratory analyses.

The Data Base

The program-level data used in the national evaluation of adult education programs were collected through two mail questionnaires (the Universe Survey and the Comprehensive Program Profile) during the 1990-91 school year from a nationally representative sample of 131 adult education programs. This initial phase of the study was used to select a sample of programs for longitudinal analysis. The longitudinal phase of the evaluation began in the spring of 1991 and ended in the fall of 1993, during which time client-level data were collected from a sample of 110 programs identified from the initial sampling frame. The client intake record and the client update record were used to collect client-level data over 19 monthly reporting periods for new students who enrolled in adult education between April 1991 and April 1992; both types of data records were completed by local adult education personnel based on project records. The client intake record provided demographic and background information on new clients and the client update record provided data on student attendance, instruction, and standardized achievement test scores. The final data file for the learning gains analysis contained information on 18,351 students from 110 local projects for whom their intake and update data were reasonable complete.

Programs had the option of reporting no test data at all, and about half of the total client sample chose this option. For the other half of the client sample, pretest data were reported primarily for the Test of Adult Basic Education (TABE) and the Comprehensive Adult Student Assessment System (CASAS). However, we ultimately obtained complete attendance data and matched pretest-posttest TABE or CASAS scores for only about 1,900 students from 65 local projects. The ESL students were tested almost exclusively with the CASAS, whereas the ABE and ASE students were tested primarily with the TABE. Once the final analysis groups were defined on the basis of four criteria used in screening the test data, the effective analysis sample was further reduced to approximately 1,300 students. Issues related to the quality of the test score data and the determination of the final analysis groups are discussed later in this appendix.

The Outcome Measures

Student learning outcomes were measured using posttest scale scores from the reading subtests of the TABE and CASAS. Pretest scores were used as control variables. CASAS scores were used to measure learning outcomes for the ESL sample, whereas TABE scores were used for the ABE and ASE analyses. Although we provided guidelines to local projects regarding when to pretest and posttest, state and local practices appear to have governed test administration in most projects. The questionable validity of much of the reported test data further exacerbated the problem of sample size adequacy.

Developed and field-tested in California, the CASAS reading test was designed with a competency-based, life-skills orientation to literacy instruction in adult education (Rickard,

1988). CASAS scale scores range from 150 to 275 and have a criterion-referenced interpretation (see Sticht [1990] for technical details).

The TABE reading subtest used in the learning gains analysis was designed by CTB/McGraw-Hill to measure comprehension of reading passages; subtest items assess recall, recognition, inference, and evaluation skills. The content of the TABE was based on a national review of curriculum guides, published texts, and instructional programs used in adult education.[2] TABE scale scores on the reading comprehension subtest range from 500 to 823; the grade equivalent is used in the learning gains analysis to provide norm-referenced interpretations of scale scores. TABE grade-equivalents were developed by CTB/McGraw-Hill through an equating of the TABE (Forms 5 and 6) with the California Achievement Test (Form E).[3]

The Predictor Variables

The independent variables used in the final analysis are described and defined below within the context of the seven-block hierarchical analysis strategy.[4] The factors assessed in the regression analysis are highlighted; variable names entered in the regression analyses are listed in capital letters in parenthesis.

Block 1: Student Background. **Race** was measured as five dummy variables (1 if yes for American INDIAN, ASIAN, BLACK, HISPANIC, or WHITE, otherwise 0), with the dominant group for a given placement level serving as the reference category. For ESL placement, Hispanic was the reference group; for ABE and ASE placement, white was the reference group. **Sex** was measured as a single dummy variable (MALE) with female as the reference group. **Age** was measured as a continuous variable (AGE) derived from client birth date information. **Educational attainment** was measured as years of school completed (SCHOOLN) prior to enrollment in adult education, coded on an 8-point ordinal scale.[5]

Block 2: Enrollment Motivation. Whether or not a student was **required** to attend adult education was measured as a single dummy variable (coded 1 if the client was REQUIRED by an employer or another program to attend adult education, otherwise 0).

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[2] See TABE (Forms 5 and 6) Test Coordinator's Handbook; CTB/McGraw-Hill, 1987.

[3] See TABE (Forms 5 and 6) Technical Report; CTB/McGraw-Hill, 1987. See also Table 71 of the TABE Norms Book which provides scale score to grade equivalent conversions.

[4] For a number of reasons, some independent variables examined in exploratory analyses were dropped from the final analysis. These reasons included nonsignificant relationships between the independent and dependent variables, redundancy among independent variables (i.e., high co-linearity), truncated variance, and lack of interpretability. For further detail, see the glossary annexed to this appendix.

[5] The eight point ordinal scale is as follows: 1 = none; 2 = 1-4 years; 3 = 5-8 years; 4 = 9 years; 5 = 10 years; 6 = 11 years; 7 = 12 years; 8 = more than 12 years.

Block 3: Entering Ability. **Reading pretest scale scores** were used to measure entering achievement levels and were intended to represent client reading ability at the beginning of a client's program of instruction. CASAS reading pretest scores (CASPRE) represented entering ability for ESL clients, and TABE reading pretest scores (TABEPRE) were used for ABE and ASE students.

Block 4: Program and Staffing Resources. Program **curriculum** (DESIGN) was measured on a 5-point scale from very individualized to very structured. **Support services** were measured as a dummy variable (SUPPORT2), coded 1 if used and 0 otherwise. **Full-time staff** was measured as a dummy variable (FTSTAFF), coded 1 if the program had at least one full-time administrator and one full-time teacher, 0 otherwise. **Professional commitment**, an indicator of teacher experience, was measured as a dummy variable (COMMIT) and coded 1 if either of the following two conditions were present: a majority of the program's instructional staff had more than 3 years of teaching experience in adult education, or at least one teacher was certified in adult education. Otherwise, the professional commitment variable was coded 0. **Cost** per student hour of instruction was measured on a 3-point scale (COST) with a score of 2 representing average cost; scores of 1 or 3 reflect costs per hour of instruction at least one standard deviation below or above the mean of the national sample, respectively.

Block 5: Class Size. Measured as the **mean class size** (MEANCLAS) across instructional environments for a given student during a given reporting period.

Block 6: Class Attendance. Student participation in four principal instructional environments was measured by the number of **hours of instruction received between the pretest and posttest** in each of the following: **classroom instruction only** (CTEACHR for ESL students and TTEACHR for ABE and ASE students), **lab only** (CLABHR for ESL students and TLABHR for ABE and ASE students), **independent study only** (CINDHR for ESL students and TINDHR for ABE and ASE students), and **class plus lab** (CTCHLBHR for ESL students and TTCHLBHR for ABE and ASE students). In addition, the **intensity of instructional attendance** was measured by the mean number of instructional hours a student received per week between the pretest and the posttest (CASHRWK for ESL students and TABEHRWK for ABE and ASE students).

Block 7: Total Hours of Instruction. The sum of a student's instructional hours between pretest and posttest across instructional environments measured **total instructional time** (CASHRS for ESL students and TABEHRS for ABE and ASE students).

Determining the Analysis Groups

Exploratory analyses resulted in the specification of inclusion rules for membership in the final analysis groups. These screening criteria are summarized below.

- Known placement in ESL, ABE, or ASE as indicated on the first client update record.[6]

- Matched CASAS or TABE pretest and posttest reading achievement scale score.

- At least 1 hour of instruction between the pretest and posttest.

- Evidence of test content validity relative to the CASAS or TABE as indicated by a program's score on item 15a of the Comprehensive Program Profile, which measured curriculum emphasis on a 5-point scale.

The application of these four screening criteria generated six analysis groups. However, three of these groups were eliminated from further consideration because of sample size limitations.[7] The three remaining final analysis groups are listed below with sample sizes as noted.

1.	ESL-CASAS	$N = 657$
2.	ABE-TABE	$N = 192$
3.	ASE-TABE	$N = 454$
	Total sample	$N = 1303$

Extensive exploratory analyses had indicated the presence of floor and ceiling effects, particularly the latter. Ceiling effects were particularly pervasive on the TABE and had proved to be the major cause of heteroskedasticity in preliminary regression analyses involving the ABE and ASE groups, thus violating a major validity assumption of the OLS linear regression model (i.e., constant error variance). In addition, it was also evident that the validity of the pretest as a baseline measure was questionable for many clients who had generated a considerable number of instructional hours prior to the first administration of the CASAS or the TABE. This was especially evident in the case of ESL students. Thus, we felt it was necessary to impose exclusion rules related to floor and ceiling effects, and limitations on the number of instructional hours that would be permitted prior to the pretest.

Cleaning the TABE data for floor and ceiling effects was hampered somewhat by the inaccuracy of the information that programs reported for the test forms they administered to students. Consequently, efforts were concentrated on limiting TABE ceiling effects since this was the major threat to the validity of the test scores. Information on the administration

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[6] In the total study sample, program placement was unknown in 431 cases.

[7] The three analysis samples eliminated from further consideration included an ESL-TABE group (n = 10), and ABE-CASAS group (n = 121) and an ASE-CASAS group (n = 190).

of the CASAS was more complete and allowed for a more comprehensive edit of both floor and ceiling effects in the CASAS data.

In resolving the problem of invalid baseline measures, criteria were established limiting the number of instructional hours that would be allowed prior to the administration of a pretest. In the case of ABE and ASE students, a pretest was considered invalid if there were more than 6 hours of instruction prior to administration of the TABE pretest. This decision meant that the pretest had to be administered generally during the first week of ABE and ASE classes. After consulting with the developers of the CASAS, we decided to accept their recommendation for allowing up to 50 hours of ESL instruction prior to the administration of the CASAS pretest. This decision meant that the CASAS pretest generally had to be administered within the first month of ESL instruction. Empirical tests of the rules limiting the number of hours of instruction prior to a pretest indicated that the constant error variance assumption of the linear regression model would again have been jeopardized if the pretest exclusion rules had not been imposed.

Cleaning the test data considerably reduced the number of cases for final analysis. The single greatest threat to the validity of TABE scores involved posttest ceiling effects. For the CASAS data, the single greatest problem involved invalid baseline measures as reflected by those ESL students who received in excess of 50 hours of instruction prior to being administered the CASAS pretest. The weighted final analysis samples were distributed as follows after editing for invalid test scores.

1.	ESL-CASAS	$N = 349$
2.	ABE-TABE	$N = 111$
3.	ASE-TABE	$N = 154$[8]
Final analysis total sample:		$N = 614$

[8] In conducting the analysis, one case from the ASE-TABE group proved to be an influential outlier and was consequently dropped from the final model for this group.

The Analysis of Learning Gains

OLS regressions were conducted with each of the three final samples using the 7-block hierarchical analysis described earlier. Development of the three regression models was guided by the following principles: (a) maximization of the R-Square statistic,[9] and (b) plausibility of independent variable relationships with the outcome variable. One-sample paired t-tests were also computed to examine the significance of gain scores for each of the three analysis groups. In addition, analysis of covariance was employed to examine the significance of differences in adjusted posttest means associated with the three principal instructional environments measured as categorical variables (classroom-only, lab-only, and classroom plus lab); significant predictors of posttest performance in each of the three regression models were used as covariates in the respective analysis of covariance applications for ESL, ABE, and ASE. The sampling weights employed in these analysis were corrected for sample size and designed to compensate for the nonrandom composition of the final analysis groups.[10]

The analysis samples are described below in exhibits E.2-E.4 using the predictors entered in each analysis block of the respective regression models. These tables compare the means and standard deviations of predictors in the analysis samples (using the revised sampling weights) with the total ESL, ABE, and ASE study samples (using the original sampling weight). In general, estimates from the analysis samples and the total study samples are very close.

Comparable information is lacking on attendance indicators for the total samples in exhibits E.2-E.4 because these variables (i.e., total hours and hours of instruction in specific instructional environments) were constructed within the context of instructional time between pretest and posttest. However, information is available for both the analysis samples and the total study sample with respect to the total hours of program attendance throughout the study. As noted in Exhibit E.1 below, program attendance was generally greater for members of the analysis samples compared to their counterparts in the total study sample.

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[9] R-Square is a Goodness of Fit statistic for estimating how well the model fits the data; it indicates the proportion of variance in the dependent variable (e.g., posttest performance) accounted for by the predictors entered into an OLS regression equation.

[10] Using estimated probabilities for selection into the final analysis sample and corrections for sample size, weights were developed for each of the three final analysis groups which adjusted the sampling weight used for the total study sample (D1WAIT) in order to generate more accurate estimates from the analysis samples for both descriptive and inferential purposes.

Exhibit E.1
Mean Hours of Program Attendance Throughout the Study for ESL, ABE, and ASE Students

Program Component	Learning Gains Analysis Sample	Total Study Sample
ESL	288.5 hours	223.8 hours
ABE	141.8 hours	83.9 hours
ASE	95.2 hours	68.0 hours

The variable names used in exhibits E.2 to E.4 are more fully explained in the glossary at the end of Appendix E. Variables that were examined during exploratory analyses but which were dropped from the final analysis also are listed in the glossary.

The ESL Sample. Hispanic, the reference group for race in the ESL sample, was not entered into the ESL regression equation; it is displayed in exhibit E.2 for descriptive purposes only. For both the ESL final analysis sample and total ESL sample, the mean value of SCHOOLN converts to 10 years of school completed prior to enrolling in adult education. Similarly, the mean scale score for DESIGN in both groups indicates that ESL instruction is generally described by program staff as individualized. In addition, cost per student hour (COST) is low in both the final analysis sample and in the total ESL sample.

Hours of instruction for ESL classrooms (CTEACHR) was highly colinear with total hours of instruction (CASHRS) and was therefore not entered into the ESL regression equation. Independent study (CINDHR) also was not entered, in this case because ESL students typically do not enroll only for independent study and because it was highly colinear with INDIAN, who do primarily enroll in ESL through independent study. The CTEACHR AND CINDHR variables are therefore not displayed in exhibit E.2.

Exhibit E.2
The Weighted ESL Final Analysis Sample
Compared with the Weighted Total ESL Study Sample

Analysis Block	Predictors	ESL Analysis Sample (N = 349) Mean	SD	Total ESL Sample (N = 6,185) Mean	SD
Student background	INDIAN	.009	.093	.007	.083
	ASIAN	.210	.408	.201	.401
	BLACK	.010	.098	.013	.111
	WHITE	.068	.253	.060	.237
	HISPANIC	.703	.458	.710	.454
	MALE	.456	.499	.462	.499
	AGE	30.464	10.852	30.189	11.179
	SCHOOLN	5.424	2.155	5.178	2.161
Motivation	REQUIRED	.092	.281	.094	.292
Ability	CASPRE	206.917	15.404	206.851	15.490
Program and staff resources	DESIGN	1.848	1.157	2.016	1.105
	SUPPORT2	.138	.346	.117	.322
	FTSTAFF	.879	.326	.866	.340
	COMMIT	.963	.189	.914	.281
	COST	1.314	.473	1.513	.679
Class size	MEANCLAS	35.966	12.902	33.789	12.294
Class attendance	CASHRWK	8.835	2.705	---	---
	CLABHR	5.486	25.872	---	---
	CTCHLBHR	23.118	48.355	---	---
Total hours	CASHRS	120.055	113.792	---	---

The ABE Sample. White, the reference group for race in the ABE sample, was not entered into the ABE regression equation; it is displayed in exhibit E.3 for descriptive purposes only. For both the ABE final analysis sample and total ABE sample, the mean value of SCHOOLN converts to approximately 10 years of school completed prior to enrollment in adult education. Similarly, the mean scale score for DESIGN in both groups indicates that ABE instruction is generally described by program staff as individualized. In addition, cost per student hour (COST) is in the average range for both the final analysis sample and the total ABE sample.

In the ABE analysis sample, hours of instruction in the teacher plus lab environment (TTCHLBHR) was highly colinear with total hours of instruction and was not entered into the ABE regression equation; it is therefore not displayed in exhibit E.3. The ratio of full-time teachers to total instructional staff (STAFFRAT) was found to be highly co-linear with both full-time staff (FTSTAFF) and class size (MEANCLAS); it was therefore not entered into the ABE regression model. Exploratory analyses indicated that it was the highly individualized aspect of the curriculum design variable that was predictive of ABE student achievement; therefore, a dummy variable representing highly individualized curriculum design (TAILOR2) was entered in the ABE regression model. The DESIGN variable is displayed in exhibit E.3 rather than TAILOR2 for descriptive and comparative purposes.

The ASE Sample. White, also the reference group for race in the ASE sample, was not entered into the ASE regression equation; it is displayed in exhibit E.4 for descriptive purposes only. For both the ASE final analysis sample and total ASE sample, the mean value of SCHOOLN converts to approximately 10 years of school completed prior to enrollment in adult education. Similarly, the mean scale score for DESIGN in both groups indicates that ASE instruction is generally described by program staff as individualized. In addition, cost per student hour (COST) is in the average range for both the final analysis sample and the total ASE sample.

In the ASE analysis sample, the variable measuring classroom instruction hours (TTEACHR) was highly colinear with total instructional hours (TABEHRS). The class hours variable was therefore not entered into the ASE regression model and it is not displayed in exhibit E.4. In addition, the full-time staff variable (FTSTAFF) was found to be highly co-linear with both the program design variable (DESIGN) and the proportion of full-time teachers on the instructional staff (STAFFRAT). Because exploratory analyses had shown that it was the individualized aspect of the design variable that was most related to student achievement, a dummy variable version of curriculum design representing individualized instruction (TAILOR) was entered and STAFFRAT was dropped in favor of FTSTAFF. The DESIGN variable is displayed in exhibit E.4 rather than TAILOR for descriptive and comparative purposes.

Exhibit E.3
The Weighted ABE Final Analysis Sample
Compared with the Weighted Total ABE Study Sample

Analysis Block	Predictors	ABE Analysis Sample (N = 111) Mean	SD	ABE Total Sample (N = 4,468) Mean	SD
Student background	INDIAN	.048	.215	.028	.164
	ASIAN	.000	.000	.019	.135
	BLACK	.293	.457	.255	.436
	HISPANIC	.099	.300	.098	.298
	WHITE	.560	.499	.584	.493
	MALE	.410	.494	.399	.490
	AGE	32.182	13.300	29.346	11.531
	SCHOOLN	4.625	1.343	4.757	1.493
Motivation	REQUIRED	.142	.347	.146	.353
Ability	TABEPRE	727.784	38.206	725.880	72.273
Program and staff resources	DESIGN	1.892	1.161	2.067	1.174
	SUPPORT2	.662	.475	.348	.477
	FTSTAFF	.656	.477	.188	.242
	COMMIT	.753	.434	.733	.443
	COST	2.228	.455	2.356	.593
Class size	MEANCLAS	16.590	16.747	22.605	29.571
Class attendance	TABEHRWK	6.022	4.037	---	---
	TTEACHR	30.809	41.252	---	---
	TLABHR	15.398	40.978	---	---
	TINDHR	5.237	19.871	---	---
Total hours	TABEHRS	83.556	72.539	---	---

Exhibit E.4
The Weighted ASE Final Analysis Sample
Compared with the Weighted Total ASE Study Sample

Analysis Block	Predictors	ASE Analysis Sample (N = 154) Mean	SD	ASE Total Sample (N = 7,267) Mean	SD
Student background	INDIAN	.055	.229	.038	.192
	ASIAN	.021	.143	.018	.133
	BLACK	.149	.357	.156	.363
	HISPANIC	.046	.211	.097	.296
	WHITE	.730	.445	.679	.467
	MALE	.253	.436	.380	.485
	AGE	25.685	8.211	27.409	11.045
	SCHOOLN	5.201	1.192	5.069	1.302
Motivation	REQUIRED	.274	.440	.114	.317
Ability	TABEPRE	754.862	18.849	763.222	33.263
Program and staff resources	DESIGN	2.454	1.254	2.050	1.109
	SUPPORT2	.407	.493	.303	.460
	FTSTAFF	.396	.484	.453	.498
	COMMIT	.527	.495	.690	.462
	COST	2.107	.540	2.349	.639
Class size	MEANCLAS	22.179	14.730	23.404	24.183
Class attendance	TABEHRWK	6.309	3.783	---	---
	TLABHR	4.012	14.436	---	---
	TTCHLBHR	18.878	40.357	---	---
	TINDHR	.922	7.019	---	---
Total hours	TABEHRS	62.504	61.677	---	---

Statistical Tables in This Appendix

Exhibits E.5 through E.11 summarize the statistical results discussed in chapter 3. Exhibit E.5 below displays the t-test results for the gain score findings presented in Exhibit 3.3 of chapter 3.

Exhibit E.5
One Sample Paired *t*-test Results:
Mean Differences between Pretest and Posttest
for
ESL, ABE, and ASE Students in the Final Analysis Groups

Analysis Group	*N*	Mean Difference	Standard Error of Mean	*t*-Value (df)	2-Tail Significance
ESL-CASAS	349	5.06	.80	6.32 (348)	.000
ABE-TABE	111	15.70	2.95	5.33 (110)	.000
ASE-TABE	154	7.05	1.39	5.06 (153)	.000

Exhibits E.6 through E.8 summarize the regression analysis findings regarding direct effects on client literacy outcomes for the ESL, ABE, and ASE components. In these exhibits, independent variables (i.e., predictors) are grouped by the analysis block in which they were entered in the regression. The unstandardardized regression coefficient (B) is displayed in the second column and the standard error associated with the unstandardized regression coefficient (SE B) is displayed in the third column for each predictor; the standardized regression coefficient (Beta) is displayed in the fourth column. The statistical significance of the F ratio for each predictor is displayed in the last column. All entries in Exhibits E.6 through E.8 are rounded to three decimal places.

Exhibit E.6
Results of the ESL Regression Analysis Model:
Direct Effects on Client Literacy Outcomes Measured by CASAS Reading Posttest Scores

Predictor	B	SE B	Beta	Significance
INDIAN	-1.258	5.548	-.008	.820
ASIAN	-2.022	1.208	-.055	.095
BLACK	3.190	4.825	.021	.509
WHITE	11.363	1.890	.191	.000
MALE	-.898	.978	-.030	.359
AGE	.050	.047	.036	.289
SCHOOLN	.978	.258	.141	.000
REQUIRED	-.221	2.141	-.004	.917
CASPRE	.674	.038	.692	.000
DESIGN	-.187	.539	-.014	.728
SUPPORT2	2.603	1.861	.060	.163
FTSTAFF	.174	1.897	.004	.927
COMMIT	-1.721	3.119	-.022	.581
COST	5.373	1.545	.170	.001
MEANCLAS	.075	.075	.064	.320
CASHRWK	-.762	.210	-.138	.000
CLABHR	-.022	.035	-.037	.533
CTCHLBHR	.009	.012	.030	.426
CASHRS	.025	.005	.192	.000

N = 349
Adjusted R Square = .70

Exhibit E.7
Results of the ABE Regression Analysis Model:
Direct Effects on Client Literacy Outcomes Measured by TABE Reading Posttest Scores

Predictor	B	SE B	Beta	Significance
INDIAN	4.769	12.122	.033	.695
BLACK	-1.706	5.113	-.025	.739
HISPANIC	-.199	6.797	-.002	.977
MALE	-3.426	4.184	-.055	.415
AGE	-.083	.155	-.035	.595
SCHOOLN	-3.101	1.811	-.133	.090
REQUIRED	-13.764	5.653	-.153	.017
TABEPRE	.635	.053	.780	.000
TAILOR2	17.349	5.341	.277	.002
SUPPORT2	1.274	4.621	.020	.783
FTSTAFF	16.681	6.612	.256	.013
COMMIT	-9.419	5.899	-.131	.114
COST	2.448	5.233	.036	.641
MEANCLAS	-.020	.140	-.011	.887
TABEHRWK	-.793	.728	-.104	.279
TTEACHR	-.113	.056	-.150	.046
TLABHR	-.131	.058	-.172	.027
TINDHR	-.032	.113	-.020	.778
TABEHRS	.060	.037	.140	.112

N = 111
Adjusted R Square = .70

Exhibit E.8
Results of the ASE Regression Analysis Model:
Direct Effects on Client Literacy Outcomes Measured by TABE Reading Posttest Scores

Predictor	B	SE B	Beta	Significance
INDIAN	-6.859	5.244	-.110	.193
ASIAN	18.393	8.706	.182	.037
BLACK	-10.842	3.686	-.261	.004
HISPANIC	-9.507	5.658	-.118	.095
MALE	1.970	2.408	.059	.415
AGE	.031	.119	.018	.794
SCHOOLN	-1.452	.816	-.119	.077
REQUIRED	1.277	2.376	.039	.592
TABEPRE	.423	.072	.439	.000
TAILOR	2.236	3.353	.077	.506
SUPPORT2	2.711	2.630	.092	.305
FTSTAFF	-3.612	4.153	-.122	.386
COMMIT	-9.359	3.846	-.324	.016
COST	5.949	2.794	.217	.035
MEANCLAS	.055	.079	.056	.492
TABEHRWK	-.227	.389	-.060	.560
TLABHR	.119	.077	.120	.128
TTCHLBHR	.021	.034	.059	.539
TINDHR	-.034	.139	-.017	.806
TABEHRS	-.014	.020	-.058	.503

N = 154
Adjusted R Square = .49

Exhibits E.9 through E.11 present the analysis of covariance results for adjusted posttest scores associated with ESL, ABE, and ASE enrollment in three types of instructional environments.

Exhibit E.9 displays the results of the analysis of covariance for ESL clients participating in the three principal instructional environments, measured as categorical variables (lab-only, classroom plus lab, and classroom-only).[11] Covariates used to adjust ESL-CASAS posttest scores included CASAS pretest score, years of school completed, race/ethnicity (dummy variable for WHITE), cost per hour of instruction, and total hours of instruction. There was no statistically significant difference overall in adjusted CASAS posttest scores for ESL clients enrolled in the three types of environments ($p = .61$). Simple contrasts on adjusted posttest means between lab-only versus classroom-only ($p = .33$) and between classroom plus lab and classroom-only ($p = .88$) were also nonsignificant.

Exhibit E.9
Analysis of Covariance Results
for ESL Participation in Three Instructional Environments:
Contrasts of Lab-Only and Classroom-Plus-Lab with Classroom-Only
on Adjusted CASAS Posttest Scores

Instructional Environment	Observed Posttest Mean	Adjusted Posttest Mean	Sample Size
Lab-Only	225	216	n = 14
Class+Lab	218	218	n = 41
Class-Only	211	219	n = 290
Total	212	219	N = 345

[11] The ESL independent study-only environment (n = 4) was not included in this analysis.

Exhibit E.10 displays the results of the analysis of covariance for ABE clients participating in the three principal instructional environments, measured as categorical variables (lab-only, classroom plus lab, and classroom-only).[12] Covariates used to adjust ABE-TABE posttest scores included TABE pretest score, whether or not the client was required to enroll, curriculum design (dummy variable for TAILOR2), and full-time staff. There was no statistically significant difference overall in adjusted TABE posttest scores for ABE clients enrolled in the three types of environments ($p = .99$). Simple contrasts on adjusted posttest means between lab-only versus classroom-only ($p = .89$) and between classroom plus lab and classroom-only ($p = .99$) were also nonsignificant.

Exhibit E.10
Analysis of Covariance Results
for ABE Participation in Three Instructional Environments:
Contrasts of Lab-Only and Classroom-Plus-Lab with Classroom-Only
on Adjusted TABE Posttest Scores

Instructional Environment	Observed Posttest Mean	Adjusted Posttest Mean	Sample Size
Lab-Only	765	748	n = 14
Class+Lab	745	749	n = 36
Class-Only	735	749	n = 51
Total	743	749	N = 101

[12] The ABE independent study-only environment (n = 10) was not included in this analysis.

Exhibit E.11 displays the results of the analysis of covariance for ASE clients participating in the three principal instructional environments, measured as categorical variables (lab-only, classroom plus lab, and classroom-only).[13] Covariates used to adjust ASE-TABE posttest scores included TABE pretest score, race/ethnicity (dummy variables for ASIAN and BLACK), cost per hour of instruction, and whether the program was characterized as "committed" or not. There was no statistically significant difference overall in adjusted TABE posttest scores for ASE clients enrolled in the three types of environments ($p = .18$). Simple contrasts on adjusted posttest means between lab-only versus classroom-only ($p = .07$) and between classroom plus lab and classroom-only ($p = .57$) were also nonsignificant.

Exhibit E.11
Analysis of Covariance Results
for ASE Participation in Three Instructional Environments:
Contrasts of Lab-Only and Classroom-Plus-Lab with Classroom-Only
on Adjusted TABE Posttest Scores

Instructional Environment	Observed Posttest Mean	Adjusted Posttest Mean	Sample Size
Lab-Only	774	768	n = 16
Class+Lab	758	763	n = 40
Class-Only	760	761	n = 89
Total	761	762	N = 145

[13] The ASE independent study-only environment (n = 9) was not included in this analysis.

Appendix E
Glossary of Independent and Dependent Variables

I. Variables Entered in the Final Analysis

Variable Name	Variable Label
AGE	Client age in years. (Interval)
MALE	Dummy variable for client gender.
INDIAN	Dummy variable for race: American Indian.
ASIAN	Dummy variable for race: Asian.
BLACK	Dummy variable for race: black, not Hispanic.
HISPANIC	Dummy variable for race: Hispanic.
WHITE	Dummy variable for race: white, not Hispanic.
SCHOOLN	Years of school completed. (Ordinal)
REQUIRED	Dummy variable for required to attend adult education.
CASPRE	CASAS pretest scale score. (Interval)
TABEPRE	TABE pretest scale score. (Interval)
DESIGN	Curriculum design: very individualized to structured. (Interval)
TAILOR	Dummy variable for individualized instruction.
TAILOR2	Dummy variable for very individualized instruction.
SUPPORT2	Dummy variable for use of support services.
FTSTAFF	Dummy variable for presence of full-time staff.
COST	Cost per student hour of instruction. (Ordinal)
COMMIT	Dummy variable for presence of 3 years' teaching experience or certification.
MEANCLAS	Average Class Size. (Interval)
CASHRWK	Hours per week between CASAS pretest and posttest. (Interval)
TABEHRWK	Hours per week between TABE pretest and posttest. (Interval)
TTEACHR	Class hours between TABE pretest and posttest. (Interval)
TLABHR	Lab hours between TABE pretest and posttest. (Interval)
TINDHR	Independent hours between TABE pretest and posttest. (Interval)
TTCHLBHR	Class plus lab hours between TABE pretest and posttest. (Interval)
CTEACHR	Class hours between CASAS pretest and posttest. (Interval)
CLABHR	Lab hours between CASAS pretest and posttest. (Interval)
CINDHR	Independent hours between CASAS pretest and posttest. (Interval)
CTCHLBHR	Class plus lab hours between CASAS pretest and posttest. (Interval)

CASHRS	Total hours between CASAS pretest and posttest. (Interval)
TABEHRS	Total hours between TABE pretest and posttest. (Interval)
CASPOST	CASAS posttest scale score. (Interval)
TABEPOST	TABE posttest scale score. (Interval)

II. Variables Dropped from the Final Analysis

Variable Name	Variable Label
DEGREE	Highest degree obtained (Ordinal)
MARRIED	Dummy variable for marital status: currently married.
SINGLE	Dummy variable for marital status: never married.
LOSTMATE	Dummy variable: Widowed, separated, or divorced.
WELFARE	Dummy variable for welfare status.
WOR	Dummy variable for employment status.
USYEARS	Years foreign-born clients have lived in USA. (Interval)
SPEKLAN	Dummy variables for language spoken in the home.
READLAN	Native language reading ability. (Ordinal)
WSPKENG	English language speaking ability. (Ordinal)
EMPLOY	Factor score for enrollment motivation: Employment.
BASIC	Factor score for enrollment motivation: basic skills.
LITERATE	Factor score for enrollment motivation: literacy
SELF	Factor score for enrollment motivation: self-esteem.
SERVEINT	Services integration (Ordinal)
ESLMOS	Number of months ESL classes held. (Interval)
ABEMOS	Number of months ABE classes held. (Interval)
ASEMOS	Number of months ABE classes held. (Interval)
STAFFRAT	Ratio of full-time teachers to total teachers.
TEACHRAT	Teacher-student ratio at the program level. (Interval)
DAY	Dummy variable: day class attendance only.
NITE	Dummy variable: night class attendance only.
DAYNITE	Dummy variable: day and night class attendance.
EMPHASIS	Indicator variable for content validity.
CONT	Continuity of instruction between pretest and posttest. (Interval)
RATIOHRS	Attendance rate measured in hours per week. (Interval)
TEACHER	Dummy variable for classroom learning environment.
LAB	Dummy variable for CAI or learning lab environment.
NONTEACH	Dummy variable for independent study or tutoring environment.

APPENDIX F

Selected Updated Tables From Second Interim Report

The first three reports of the National Evaluation of Adult Education Programs were interim and particularly the second and third reports used data that were in constant flux. In this appendix we provide updated versions of selected tables from the Second Interim Report: Profiles of Client Characteristics. We have retained the original table numbering to facilitate cross-reference. Key tables from the third interim report were updated and presented in Chapter 2 of this report. Most of the tables in the first report are based on the program level surveys, and these data have not changed.

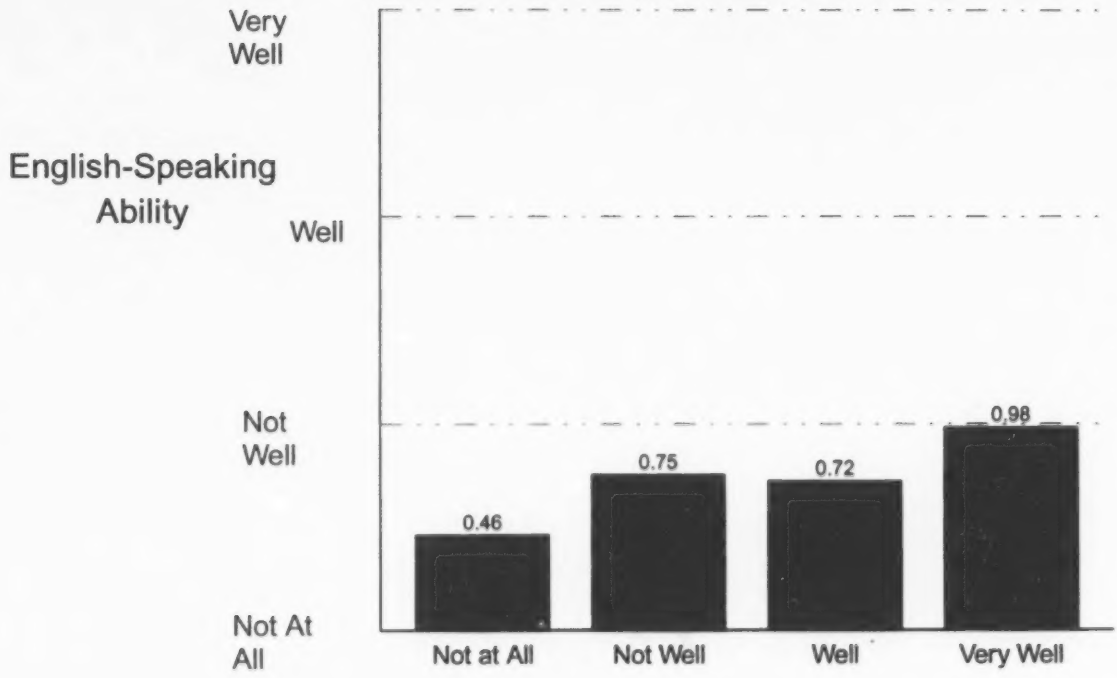
Exhibit 3.1
Distribution of New ESL Clients by Racial/Ethnic Composition
(*N* = 7,525)

Racial/Ethnic Group	New ESL Clients
American Indian/Alaskan Native	<1 %
Asian/Pacific Islander	19
Black, non-Hispanic	4
Hispanic	69
White, non-Hispanic	7
Total	100 %

Exhibit 3.2
Native-Language Reading Ability and English-Speaking Ability, by Percent of New ESL Clients Who Speak a Language Other Than English at Home
(*N* = 4,964)

Self-Rated Ability	Reading in Native Language	Speaking English
Not at all	1 %	25 %
Not well	7	62
Well	26	11
Very well	66	2
Total	100 %	100 %

Exhibit 3.3
The Relationship Between Self-Reported Native Language Reading Ability for New ESL Clients Who Speak a Language Other Than English at Home
(N = 4,925)



Note: Values in chart are mean scores on a scal with "Not at all" = 0 and "Very Well" = 3

Exhibit 3.4
Distribution of New ESL Clients
by Age Group
(*N* = 7,626)

Age Group	New ESL Clients
16-21	22 %
22-30	39
31-45	29
Over 45	10
Total	100 %

Exhibit 3.5
Educational Attainment of New ESL Clients
(*N* = 6,301)

Highest Level of Education Attained	New ESL Clients
No high school diploma or GED	50 %
High school diploma or GED	29
Postsecondary degree	21
Total	100 %

Exhibit 3.6
Distribution of New ESL Clients
by Type of Agency Sponsoring the Program
(*N* = 7,626)

Type of Program Sponsor	New ESL Clients
Public school system	84 %
Community college	12
Private voluntary organization	2
Regional education service agency	1
Technical institute	1
Total	100 %

Exhibit 3.7
Distribution of New ESL Clients by Type of Community
(*N* = 7,626)

Type of Community	Percent of ESL Clients
Large city in major metro area	54 %
Remainder of major metro area	31
Small metro area	11
Nonmetro area	4
Total	100 %

Note: Community designations are based on 1990 census information plus responses to the Universe Survey on type of community served (item 3). Major metropolitan areas are defined as those having a population of 1.5 million or more; large cities in major metro areas as those having a population of 500,000 or more; and small metro areas as any community located within a standard metropolitan area with a population of less than 1.5 million.

Exhibit 3.8
Distribution of New ESL Clients by Census Region
(*N* = 7,626)

Census Region	New ESL Clients
Northeast	6 %
North Central	9
South	13
West	72
Total	100 %

Exhibit 3.9
National Origin of New Clients by Instructional Program
(*N* = 16,420)

National Origin	ESL	ABE/ASE	Overall Average
Native-born	2 %	87 %	47 %
Foreign-born	98	13	53
Total	100 %	100 %	100 %

Exhibit 3.10
Distribution of New ABE/ASE Clients by Racial/Ethnic Composition
(*N* = 14,176)

Ethnic Group	ABE	ASE	Overall Average
American Indian/Alaskan Native	2 %	4 %	3 %
Asian/Pacific Islander	1	2	2
Black, non-Hispanic	39	20	28
Hispanic	12	13	13
White, non-Hispanic	46	61	54
Total	100 %	100 %	100 %

Exhibit 3.11
Racial/Ethnic Distribution of New Clients
by Type of Instructional Program
(*N* = 21,701)

Ethnic Group	ESL	ABE/ASE	Overall Average
American Indian/Alaskan Native	<1 %	3 %	2 %
Asian/Pacific Islander	19	2	10
Black, non-Hispanic	5	28	17
Hispanic	69	13	38
White, non-Hispanic	7	54	33
Total	100 %	100 %	100 %

Exhibit 3.12
Differences in Language Spoken in the Home for New ESL and ABE/ASE Clients
(*N* = 14,090)

Language Spoken in the Home	ESL	ABE/ASE	Overall Average
English	4 %	82 %	42 %
Other than English	96	18	58
Total	100 %	100 %	100 %

Exhibit 3.13
Distribution of New ABE/ASE Clients by Age Group
(*N* = 14,393)

Age Group	ABE	ASE	Overall Average
16 - 21	28 %	44 %	37 %
22 - 30	30	27	28
31 - 45	31	23	27
Over 45	11	6	8
Total	100 %	100 %	100 %

Exhibit 3.14
Educational Attainment of New ABE/ASE Clients
(*N* = 12,478)

Highest Level of Education Attained	ABE	ASE	Overall Average
No high school diploma	78 %	87 %	83 %
High school diploma	20	10	14
Postsecondary degree	2	3	3
Total	100 %	100 %	100 %

Exhibit 3.15
Differences in Educational Achievement by New ESL and ABE/ASE Clients
(*N* = 18,779)

Highest Level of Education	ESL	ABE/ASE	Overall Average
No diploma	50 %	83 %	68 %
High school diploma	29	14	21
Postsecondary degree	21	3	11
Total	100 %	100 %	100 %

Exhibit 3.16
Distribution of New ABE/ASE Clients by Type of Sponsoring Agency
(*N* = 14,393)

Type of Sponsor	ABE	ASE	Overall Average
Public school system	59 %	68 %	64 %
Community college	29	20	24
Technical institute	4	6	5
Private voluntary organization	6	3	4
Regional education service agency	2	3	3
Total	100 %	100 %	100 %

Exhibit 3.17
Distribution of New ABE/ASE Clients
by Type of Community
(*N* = 14,393)

Type of Community	ABE	ASE	Overall Average
Large city in major metro area	13 %	7 %	9 %
Remainder of major metro area	30	26	28
Small metro area	27	33	30
Nonmetro area	30	34	33
Total	100 %	100 %	100 %

Exhibit 3.18
Distribution of New ABE/ASE Clients
by Census Region
(*N* = 14,393)

Census Region	ABE	ASE	Overall Average
Northeast	15 %	14 %	15 %
North Central	29	27	28
South	49	41	44
West	7	18	13
Total	100 %	100 %	100 %

Exhibit 4.1
Distribution of New Clients by Type of Sponsoring Agency and Program Component
(*N* = 20,718)

Type of Sponsor	ESL	ABE	ASE	Average
Local education agency (LEA)	85 %	59 %	68 %	73 %
Community college	12	29	20	18
Private voluntary organization	2	6	3	3
Technical institute	1	4	6	3
Regional education service agency	1	2	3	3
Total	100 %	100 %	100 %	100 %

Exhibit 4.2
Distribution of New Clients by Type of Sponsoring Agency and Race/Ethnicity
(*N* = 20,373)

Type of Sponsoring Agency	American Indian/ Alaskan Native	Asian Pacific Islander	Black, non-Hispanic	Hispanic	White, non-Hispanic	Total
Local education agency (LEA)	2 %	11 %	18 %	43 %	26 %	100 %
Community college	1	7	18	27	47	100
Other	2 %	6 %	9 %	18 %	65 %	100 %

Exhibit 4.3
Mean Pretest Achievement Scores of New Clients by Program Sponsorship

Indicator	Local Public Education Agency	Community College	Other Type of Sponsor	Average for Adult Education Population
CASAS (ESL) scale score (*N* = 2,345)	207	211	201	207
CASAS (ABE) scale score (*N* = 983)	226	233	229	229
CASAS (ASE) scale score (*N* = 1,589)	234	235	231	234
TABE (ABE) grade-equivalent score (*N* = 1,484)	7.7	7.9	7.0	7.6
TABE (ASE) grade-equivalent score (*N* = 2,250)	10.0	10.2	11.3	10.3

Exhibit 4.4
Distribution of New Clients by Age Group and Program Component (*N* = 18,357)

Age Group	ESL	ABE	ASE	Average
Youth group (ages 16-21)	22 %	28 %	44 %	30 %
Young adult group (ages 22-30)	39	30	27	33
Middle age group (ages 31-45)	29	32	23	28
Older client group (over age 45)	10	10	6	9
Total	100 %	100 %	100 %	100 %

Exhibit 4.5
Distribution of New Clients by Personal and Family Characteristics and Age Group
(*N* = 14,109-22,548)

Characteristic	Youth Group (ages 16-21)	Young Adult Group (ages 22-30)	Middle Age Group (ages 31-45)	Older Client Group (over age 45)	Adult Education Population Mean
National origin	Native-born 60 %	Foreign-born 60 %	Foreign-born 57 %	Foreign-born 60 %	Foreign-born 53 %
Sex	Female 50 %	Female 56 %	Female 61 %	Female 62 %	Female 56 %
Language other than English spoken at home	English 52 %	Other 64 %	Other 60 %	Other 64 %	Other 58 %
Young children	None 63 %	None 55 %	None 65 %	None 83 %	None 62 %

Exhibit 4.6
Distribution of New Clients by Age Group and Race/Ethnicity
(*N* = 16,747)

Age Group	American Indian/Alaskan Native	Asian/ Pacific Islander	Black, non-Hispanic	Hispanic	White, non-Hispanic	Total
Youth group (ages 16-21)	2 %	5 %	17 %	36 %	40 %	100 %
Young adult group (ages 22-30)	2	11	16	43	28	100
Middle age group (ages 31-45)	2	11	20	36	31	100
Older client group (over age 45)	2 %	16 %	18 %	33 %	31 %	100 %

Exhibit 4.7
Distribution of New Clients by Employment Status and Age Group
(*N* = 14,076)

Indicator	Youth Group (ages 16-21)	Young Adult Group (ages 22-30)	Middle Age Group (ages 31-45)	Older Client Group (over age 45)	Average for Adult Education Population
Employed	38 %	46 %	43 %	40 %	42 %
Unemployed	29	19	21	15	22
Not in work force	33	35	37	45	35
Total	100 %	100 %	100 %	100 %	100 %

Exhibit 4.8
Distribution of New Clients by Education Characteristics and Age Groups

Indicator	Youth Group (ages 16-21)	Young Adult Group (ages 22-30)	Middle Age Group (ages 31-45)	Older Client Group (Over age 45)	Average for Adult Education Population
Median years of schooling (N = 20,940)	10	10	10	9	10
Percentage without a high school diploma (N = 19,016)	80	62	63	68	68
CASAS (ESL) mean scale score (N = 2,345)	205	209	208	199	207
CASAS (ABE) mean scale score (N = 983)	231	230	229	217	229
CASAS (ASE) mean scale score (N = 1,589)	235	234	235	232	234
TABE (ABE) mean scale equivalent (N = 1,484	7.5	7.8	7.7	7.0	7.6
TABE (ASE) mean grade equivalent (N = 2,250)	10.3	10.4	10.4	9.9	10.3

Exhibit 4.9
Distribution of New Clients by Type of Community and Program Component
(*N* = 20,418)

Type of Community	ESL	ABE	ASE	Average
Large city in major metropolitan area	54 %	13 %	6 %	30 %
Remainder of major metropolitan area	31	30	26	30
Small metropolitan area	11	27	33	21
Nonmetropolitan area	4	30	35	19
Total	100 %	100 %	100 %	100 %

Note: major metropolitan area was defined as having a population of 1.5 million or more; large cities in major metropolitan areas as having a population of 500,000 or more; and small metropolitan areas as any community located within a standard metropolitan area with a population of less than 1.5 million.

Exhibit 4.10
Distribution of New Clients by Race/Ethnicity and Type of Community
(*N* = 22,067)

Race/ Ethnicity	Large City in Major Metro Area	Remainder of Major Metro Area	Small Metro Area	Nonmetro Area	Average for Ethnicity
American Indian	<1 %	1 %	2 %	6 %	2 %
Asian/Pacific Islander	13	10	9	4	10
Black, non-Hispanic	9	31	14	14	17
Hispanic	70	43	16	8	38
White, non-Hispanic	8	16	58	68	33
Average for Type of Community	30 %	29 %	21 %	19 %	100 %

Exhibit 4.11
Distribution of New Clients by Census Region and Type of Community
(*N* = 22,548)

Census Region	Large City in Major Metro Area	Remainder of Major Metro Area	Small Metro Area	Nonmetro Area	Total Region
Northeast	15 %	26 %	55 %	4 %	11 %
North Central	27	10	27	36	19
South	1	47	21	32	30
West	57	26	9	8	40
U.S. Average	29 %	30 %	21 %	20 %	100 %

Exhibit 4.12
Mean Pretest Achievement Scores of New Clients by Type of Community

Indicator	Large City in Major Metro Area	Remainder of Major Metro Area	Small Metro Area	Nonmetro Area	Average for Adult Education Population
CASAS (ESL) scale score (*N*=2,345)	206	208	208	211	207
CASAS (ABE) scale score (*N*=983)	232	223	230	229	229
CASAS (ASE) scale score (*N*=1,589)	235	236	235	234	234
TABE (ABE) grade-equivalent score (*N*=1,484)	7.0	6.2	7.2	8.4	7.6
TABE (ASE) grade-equivalent score (*N*=2,250)	9.2	10.0	10.5	10.4	10.3

Exhibit 4.13
Expected and Actual Placement for Clients Based on Test Scores
(*N* = 2,345 for CASAS ESL; 2,572 for CASAS ABE/ASE; 3,734 for TABE)

Placement Level	Percentage of CASAS Sub-Sample		Percentage of TABE Sub-Sample	
	Expected	Actual	Expected	Actual
ESL Beginning	33 %	78 %	--	--
ESL Intermediate	47	14	--	--
ESL Advanced	20	8	--	--
ABE Beginning	10 %	15 %	14 %	17 %
ABE Intermediate	12	23	32	23
ASE	78	62	54	60

Exhibit 4.14
Appropriateness of New Clients Placement
Mean Pre-Test scores by Program Placement Level*
(*Ns* range from 284-3,740, depending on the cell)

Initial Program Placement	Expected Scores		Percent Appropriately Placed	Mean CASAS Scale Score	Mean TABE Grade-Equivalent Score
	CASAS	TABE			
ESL Beginning	181-200	--	34 %	203.0	--
ESL Intermediate	201-215	--	34	217.5	--
ESL Advanced	216-224	--	20	226.7	--
ABE Beginning	214 or below	6.0 or below	38	225.1	6.6
ABE Intermediate	215-224	6.1-8.9	42	231.6	8.3
ASE/GED	225 or above	9.0 or above	76 %	234.4	10.3

*Appropriate placement is defined as having a pretest score falling within the "Expected Scores" range for the level at which clients began receiving services.

Exhibit 4.15
Comparison of Past Educational Experience of the Adult Education Program Target Population and New Client Population

Years of School Completed	Target Population	New Clients
8 or less	40 %	29 %
9	13	18
10	17	17
11	15	23
12	15	13
Total	100 %	100 %

Note: The "target population" is defined as individuals aged 16 years and older who have not attained a high school diploma or equivalent and are not currently enrolled in school. To be more equivalent to the target population data, the adult education client population represented in this table excludes ABE/ASE clients (about 6 percent of all clients) with a high school diploma or equivalent. The Adult Education Act permits serving clients with a high school diploma if they meet other criteria of need.

Exhibit 4.16
Comparison of Past Educational Experience of Adult Education Program Target Population and of the Program's New Client Population

Years of School Completed	16-24 years		25-44 years		45-59 years		60 years and older	
	Target Pop.	New Clients	Target Pop.	New Clients	Target Pop.	New Clients	Target Pop.	New Clients
8 or less	20 %	21 %	28 %	33 %	38 %	48 %	53 %	59 %
9	15	20	13	17	13	13	12	10
10	22	19	19	16	18	12	14	7
11	23	28	19	21	16	14	10	16
12 (no diploma)	20	13	21	13	15	12	11	8
Total	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %

Note: The "target population" is defined as individuals aged 16 years and older who have not attained a high school diploma or equivalent and are not currently enrolled in school. To be more equivalent to the target population data, the adult education client population represented in this table excludes ABE/ASE clients (about 6 percent of all clients) with a high school diploma or equivalent. The Adult Education Act permits serving clients with a high school diploma if they meet other criteria of need.

Exhibit 4.17
Comparison of English Speaking Ability of ESL Clients and Target Population

English Speaking Ability	Total ESL Population	New ESL Clients	Ratio of Percent New Clients to Percent Target Populaton
Not at All	14 %	25 %	1.8
Not Well	25	62	2.5
Well	25	11	.4
Very Well	36	2	.1
Total	100 %	100 %	

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